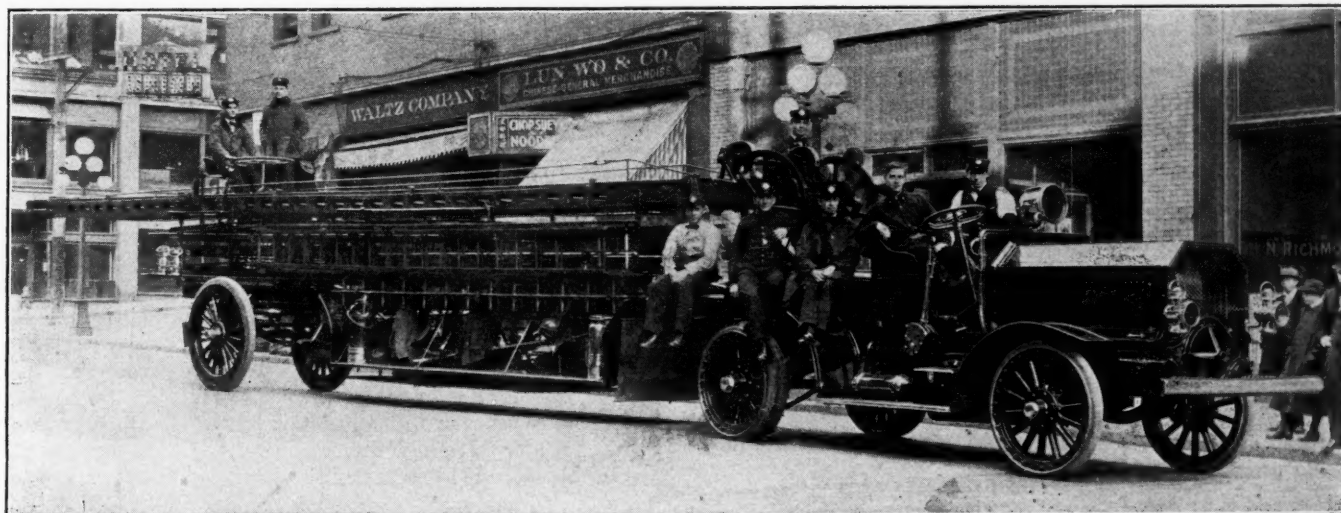


# Municipal Journal

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AERIAL TRUCK NO. 1, SEATTLE FIRE DEPARTMENT.

## SEATTLE'S FIRE DEPARTMENT

Operation of the Two-Platoon System Commended by Officials and Necessary Appropriation Voted by Citizens  
—Horse Drawn and Automobile Apparatus and Fire Boats—Cost of Horse vs. Motor Apparatus.

By CLAUDE A. OSIER.

The Fire Department of the city of Seattle, which has been operating under the two-platoon system since April 1, 1913, affords a very interesting study of one of the most valuable branches of municipal service. Although at the time of its inception and final adoption, strenuous opposition to the two-platoon system was encountered, those who most bitterly opposed the measure now unanimously commend the excellent work under the new system.

Mayor Geo. F. Cotterill, when asked to compare the present condition of the department with that previous to the installation of the two-platoon system, said:

"There is no question of the efficiency and the certainty of the humanitarianism of the plan. The men are most certainly happier under it than they were under the system of continuous duty. There has been no protest from the Board of Underwriters, nor any expression of dissatisfaction whatsoever since the platoon was adopted. There is no demand from any quarter for a return to the previous system. The only objection that has ever been raised, or in my judgment ever could be raised, to the plan is that of its increased cost. The two-platoon plan involves an increase of approximately 35 to 40 per cent in our particular fire department cost, as compared to the continuous duty plan.

"Our citizens of Seattle, at the election at which this was submitted, although already over-burdened with high taxation, voted by more than two to one in favor

of a more humane treatment of firemen, even at the expense of higher taxation."

The Seattle Fire Department consists of 515 members, as compared to 361 before the two-platoon went into effect. The additional 154 men were added to the department at an expense of approximately \$118,000 for the balance of the year. The men work in two shifts, which go on duty at 8 o'clock a. m. and 6 p. m., and work 10 hours day-time and 14 hours night-time—alternating monthly.

The apparatus of the department consists of 15 steam fire engines, 21 horse-drawn hose wagons, 7 combination horse-drawn hose and chemical wagons, 2 automobile hose wagons, 3 automobile hose and chemical wagons; 7 horse-drawn hook and ladder trucks, one automobile aerial truck, 2 combination 60-gallon horse-drawn chemical engines, one double 80-gallon automobile chemical engine, one water tower, 2 fireboats and 5 chief's automobiles. Two automobile combination hook and ladder and chemical trucks and one automobile aerial truck of the most improved type have been ordered from the Seagrave company, and will be added to the department in a very short time.

Guarding the water-front, with its miles of wharves and industrial enterprises, two fire-boats, having a combined capacity of 15,000 gallons per minute, afford excellent protection in connection with the land force. The latest fireboat, the "Duwamish," was built by a local

company and cost the city \$122,219.78, exclusive of designer's fee. (This boat was described in the August 28th issue of Municipal Journal.)

This department is keeping pace with modern methods and equipment for fire fighting, especially in the way of new motor apparatus. Although the present equipment consists of but 7 pieces of motor-propelled fire-fighting apparatus, 3 additional pieces have been ordered; and \$46,000 is available at this time for the purchase of new apparatus and the motorizing of the present equipment. This transition from the horse-drawn to motor-driven vehicles has been the result of having demonstrated its efficiency to such an extent that the manifold advantages cannot be disputed. The following figures on three pieces of motor apparatus in the department will serve as a comparison between the cost of motor-driven and horse-driven equipment:

#### AERIAL TRUCK WITH TRACTOR ATTACHMENT.

Cost of repairs, including labor and material, 12 months .....	\$15.00
Cost of lubricating oil.....	14.90
Cost of gasoline, 149 gallons.....	22.35

\$52.25

Distance traveled, 149 miles; cost per mile..... .35

Cost of horse-drawn apparatus, three horses, with same equipment and traveling same distance for same period, \$1,095; per mile..... 7.34

#### COMBINATION HOSE WAGON.

Cost of repairs, including labor and material, 24 months .....	\$212.75
Cost of lubricating oil.....	20.00
Cost of gasoline, 843 gallons.....	102.45

\$335.20

Distance traveled, 1,093 miles; cost per mile..... .31

Cost of horse-drawn apparatus, two horses, with same equipment, and traveling same distance for the same period, \$1,460; per mile..... 1.34

#### CHEMICAL ENGINE.

Cost of repairs, including labor and material, 24 months .....	\$180.00
Cost of lubricating oil.....	20.00
Cost of gasoline, 550 gallons.....	82.50

\$282.50

Distance traveled, 792 miles; cost per mile..... .36

Cost of horse-drawn apparatus, two horses, with same equipment, and traveling same distance for the same period, \$1,460; per mile..... 1.84

The comparison is distinctly in favor of the motor-driven apparatus. Aside from this, there are the added features of speed, convenience and sanitation.

The expenses for the year 1912 were \$570,600.28, of which \$468,190.20 was expended for salaries of members. This will, of course, be materially increased for the present year, by reason of the adoption of the Platoon System.

#### TWO-PLATOON SYSTEM.

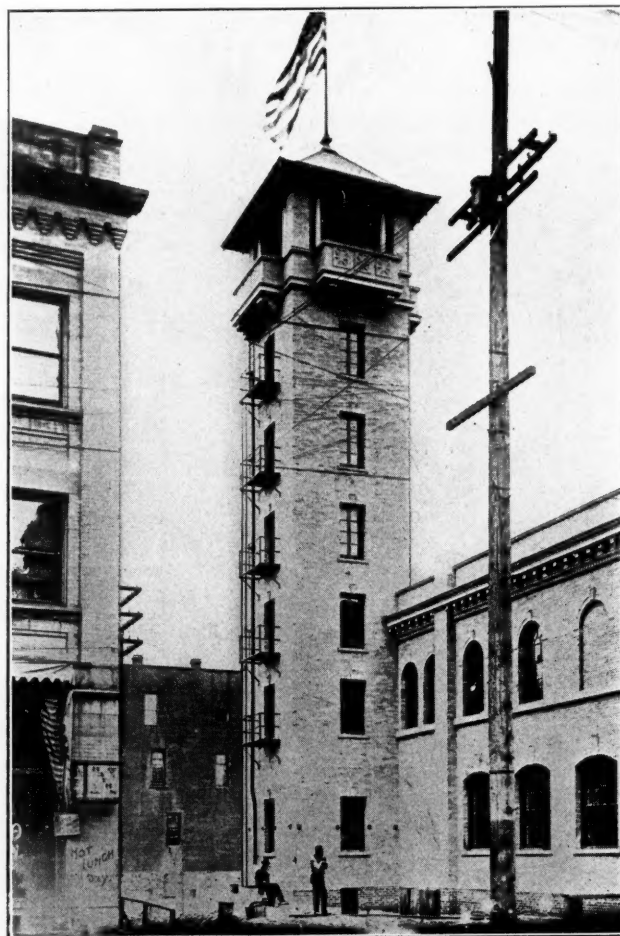
Under the platoon system, every man is obliged to have telephone communication with the department headquarters, thus providing that men off shift may be called in case of actual need. Their telephone numbers are in the hands of their company commander, who, in case a contingency arises, notifies each man to appear at the scene of the fire. He is then ordered to take charge of the fire apparatus not in use, returning to his headquarters, where the machine is placed in service again, the fireman remaining until the shift on duty (those at the fire) return to their respective stations. In this way, the remainder of the city is protected with adequate fire-fighting strength during the time a fire is raging. Before the time of the platoon system, after the second alarm call had been turned in, fire companies from the outlying districts were brought into the business district, thereby leaving their districts unprotected. It will also be seen that by the time companies from all

over the city had answered the call, and were actively engaged in fighting the flames, many valuable pieces of apparatus were left standing empty and idle in the street—when if enough men had been available to man them, they could have been taken back to their respective stations and put into service once more.

Another feature worthy of mention is the point that when a man has worked his full shift, he is at liberty to go to his home, and recuperate from his day, whether it has been strenuous or not, without the fear of being forced to respond to a night alarm. The men off shift are not forced to respond to a second alarm call, but all have agreed to do so, in order that the two-platoon system will be a success, and that the city may be adequately protected at all times.

At the time of the disastrous "Times" fire, when the newspaper plant of the Times Publishing Company was threatened with total annihilation, the second alarm was rung at 11:45 a. m., and over 85 per cent of the men off shift had reported for duty within 45 minutes, and were used to advantage owing to the fact that a number of the fire-fighters had been overcome by gas explosions. The remainder who were not needed at the fire manned the superfluous fire apparatus and took it back to its respective station, where it was in readiness for a possible additional fire. On October 11, when the plant of the Seattle Construction & Dry Dock Company was endangered, and the second alarm had been turned in, over 90 per cent of the men off duty reported, and deported themselves practically in the same manner as described in the incident of the "Times" fire.

On June 10, 1910, practically two years before the two platoon system went into effect, one of the most disastrous fires which ever occurred in Seattle, raged in North Seattle. Every available man and every piece of



SEATTLE FIRE DEPARTMENT DRILL TOWER.



apparatus was rushed to the fire, in an effort to check the conflagration. Useless fire apparatus was left standing in the street from 10 P. M. until 9 A. M., while other sections of the city were left entirely unprotected. Under the new system, this apparatus would have been taken back to the station and placed in service.

The officers in the department are unanimous in their approval of the two platoon, and have invariably given an affirmative answer when asked if they considered their company more efficient under that system. Another point worthy of mention is the fact that each man has his certain position, which was impossible under the old system. Under this working condition, a man will become more proficient than one who is forced to fill different positions at different times. Discipline has increased 100 per cent, as the men are putting forth every effort to make the two-platoon a decided success, whereas, before, the men, while working under the continuous service plan, had no incentive to do more than they were compelled.

A necessary part of the equipment of a modern fire department is some device which will not only enable the fireman to enter smoke-filled buildings but will allow him to perform the heaviest labor incident to the fire. Several companies in the Seattle fire department are equipped with Draeger helmets. These smoke protectors have been successfully used at several fires and also in cases of ammonia tanks and pipes bursting, members of the Seattle fire department so equipped having worked closing valves and repairing pipes over an hour on different occasions without experiencing the least ill effect. The department is also provided with Draeger pulmotors which were used successfully at the recent Times Building fire where a dozen members (not equipped with smoke protectors) were carried out unconscious after a gas explosion. At the Washington theatre fire the moving picture operator was carried out for dead from the fumes of burning films, but was revived through the operation of a fire department pulmotor. Since the fire department has demonstrated the value of these devices the city hospital, gas and electric companies, as well as ambulances, have provided themselves with pulmotors.

#### STREET CLEANING IN NEW YORK.

There were on December 31, 1912, in the boroughs of Manhattan, the Bronx and Brooklyn, New York City, 26,454,553 square yards of paved streets. To clean this there were employed 2,974 hand sweepers or White Wings, an average of 8,895 square yards to a sweeper. The areas per sweeper vary in the different boroughs, however, being 5,153 in Manhattan, 13,007 in the Bronx, and 15,029 in Brooklyn. As a matter of fact, the last probably should be stated as 14,772 square yards, since there are included in the area 275,435 square yards of gutters, which are cleaned by hand periodically. In the purely business districts the work, instead of being done by the patrol system as in other parts of the boroughs, is done by gangs which work at night; and this system is effective also in the congested tenement districts.

As an auxiliary cleaning plant the department has 95 sprinkling carts, 148 machine brooms, 5 flushing machines, and 9 squeegees. The water cleaning plant is considered pitifully small, but appropriations have not been obtained for increasing it. To eke out this machine plant, hose flushing is employed, which is uneconomical, ineffective, and wasteful of water. Commissioner of street cleaning William H. Edwards is very desirous of making extensive tests of mechanical pick-up machines, those of the vacuum type and others, but the

money has not been forthcoming for this purpose. "It is becoming more and more apparent" said he, "that auxiliary methods must be developed to a large extent and other cities are forging ahead of us in this regard. There is no machine which will do all the work of cleaning, and I feel that we must soon adopt a system which will combine wet and dry machine work, with the hand sweeper as a litter and manure collector.

"For sanding the streets I have not attempted to add to the machine spreading plant, as there is great difficulty in procuring dry sand, and wet sand does not work well enough through the machine nor give a good result on the pavement. However, I have placed, at the summit of steep grades, sand boxes of about one cubic yard capacity from which the sand can be taken by shovel and spread effectively. I have notified the public through the press of the placing of these boxes, and have asked that when our men are not present in case of need any citizen will use the sand to prevent accident to horses.

"As to the careless littering of the streets by pedestrians and householders, I have carried on an active campaign of education and have received excellent support from the police. We have now 1,420 litter cans placed at intervals along the curb for the deposit of litter and fruit skins by pedestrians, and they should be of value in reducing the street littering, and I propose to add to this number whenever and wherever there should seem to be necessity therefor."

The amount of wastes collected during the year is almost beyond conception; having amounted to more than two and three-quarter million tons of ashes and street sweepings, about 211,000 tons of rubbish, and 341,000 tons of garbage. The ashes, rubbish and garbage have been removed from 1,150,136 families occupying 278,207 houses. The amount collected would cover an area one mile long and 170 feet wide to a depth of 10 feet. This collection was made by a total force of 1,970 drivers, or nearly six tons per day per driver.

Concerning the subject of type of cart for collecting refuse, Mr. Edwards says that he believes that larger units should be used than those at present employed. He has had a 5-ton truck constructed which carries as much material as six of the ordinary carts and is easily drawn by three horses and operated by four men—three loaders and a driver. In a test which was made, it was found that the average time of loading a cart was 42 minutes; hauling, 25 minutes; dumping, 5 minutes; a total of 72 minutes. The truck time was 107 minutes for loading; hauling, 30 minutes; dumping, 8 minutes; a total of 145 minutes; that is, six cartloads were collected and dumped in just about twice the time it took for one cartload under the present system. The use of motor trucks would undoubtedly reduce the hauling time, and data are now being collected to determine whether the use of these would be economical from all points of view.

#### REFUSE COLLECTION IN PHILADELPHIA.

For the purpose of collecting garbage and refuse, the city of Philadelphia is divided into eight districts, and a separate contract is made for the collection of garbage, ashes and rubbish and street cleanings in each of these districts. The garbage is collected six times a week in all sections, in sheet iron wagons with flat metal covers and inclined back to facilitate dumping, the capacity of which is 93 cubic feet. These wagons are drawn by two horses. Ash collections are made once a week by wagons having tailboards and canvas covers, holding about 4 cubic yards and drawn by two horses. The limit for one horse is 400 lbs. About 15 per cent of the ashes is hauled by trolley, and another 15 per cent by

barge. Rubbish also is collected once a week, the amount collected from individual buildings being unlimited. Ash wagons supplied with racks and covered with canvas are used for this purpose.

Garbage is disposed of by a reduction process consisting of steam digesters, hydraulic compressors and gasoline percolators. Ashes are used for filling in low land.

## DENVER'S FIRE DEPARTMENT

### Efficiency Obtained with Comparatively Small Force—Importance of Use of Training Tower—Fire Prevention Inspection System.

The city of Denver, Col., claims to have secured in its fire department a very high efficiency in spite of the comparatively small number of men on its roster. The population of the city is over 200,000, while the fire department contains only 219 men, which are divided as follows: One chief, one deputy chief, four assistant or district chiefs, one department secretary, one superintendent of lines (fire alarm telegraph), two linemen, three operators, one machinist, twenty captains, twenty-one lieutenants, nine engineers, nine assistant engineers, six fire wardens and 144 firemen, including pipemen, laddermen and drivers.

These men are distributed among the following companies: Nine engine companies, furnished with hose wagon and engine; nine hose companies, having hose wagon only; six hook and ladder companies, four of them aerial; one supply wagon; one water tower in reserve, and one aerial hook and ladder in reserve. The apparatus includes four motor propelled combination chemical and hose wagons; six automobiles for the use of the chiefs, and one for the line department. Apart from these, all of the apparatus is horse-drawn.

It is believed that the high efficiency obtained from this inadequate number of men and equipment may be attributed to the following reasons: (1) The fire department is not in politics. (2) Each member of the department must undergo a rigid Civil Service examination. (3) A training tower is maintained under a competent instructor, where the firemen are practiced in the handling of ladders, hose, etc., so that when occasion arises they know what to do and when and how to do it, besides having their muscles trained for the particular work required. (4) The chief and his assistants are men who have fought their way up from the ranks solely on their merits.



DENVER'S TRAINING TOWER.

The training tower is one of the most important adjuncts of the fire department. It is a steel and frame structure 18 feet square and 72 feet high, equipped with internal and external standpipes, an inside stairway and a straight iron ladder which runs through a well in the centre of the tower. Practice on this tower is held every morning during the months of May, June, July

and August, the various companies of men being drilled in turn. The work is in charge of Assistant Chief A. L. Graeber. The drill here includes work with pompiers ladders, life line and net, the handling of wet and dry lines of hose on aerial ladders and on the inside stairway and ladder, together with other exercises which are likely to be met with in actual fire work.

Until recently fire prevention work was somewhat neglected. There were fire wardens who made inspections at stated intervals and did their best to carry out the purposes for which they were appointed, but they were too few to obtain the results desired. Under Commissioner of Safety Nisbet, the head of the department, and Chief John F. Healy, a system was recently installed whereby each district chief is held responsible for proper inspection in the territory which he commands. Every day the district chiefs, accompanied by the captains of the various companies, make an inspection of some part of their particular district, examining buildings, investigating conditions generally, and making suggestions for needed changes. It is the duty of the district chiefs to see that these recommendations are complied with. In addition to this general inspection, there are two fire wardens who devote their entire time to motion picture playhouses. Each theatre also has a special uniformed fireman who goes on the stage thirty minutes before the start of each performance and never leaves it until the performance is over and everybody is out of the building.

Chief Healy is now asking for an appropriation which will enable the department to buy and put in service four motor-propelled triple combination engines, build several new stations and add more men to the department.

The fire department has a pension fund created by an act of the State Legislature which insures every man a pension when he becomes too old to remain in the department, and a comfortable sum for his widow and children in the event of his death.

## BROOKLYN'S NEW FIRE ALARM

### Present System Antiquated—Street Boxes to Be Modernized, Wires Placed Underground and Improved Central Station Apparatus Installed.

From May 1, 1912, to May 1, 1913, there occurred in the fire alarm telegraph system of New York City 2,772 circuit troubles of an accidental nature due to the antiquity of the system. Commissioner Joseph Johnson, referring to these, said: "This resulted in the temporary disabling of approximately 139,000 fire alarm boxes—the average number of boxes on a circuit multiplied by the number of circuit troubles. The Brooklyn fire alarm system was responsible for more than 75 per cent of this number. Notwithstanding this stupendous handicap to the safe operation of the city fire alarm telegraph system, all alarms of actual fire but thirteen were properly transmitted."

The chief engineer of the fire alarm telegraph bureau of the city, Leonard Day, states that the present equipment of the Brooklyn central office was installed in 1892 and 1893 and is now antiquated, and a new system is to be substituted for it which will be a great improvement in every respect.

In the new system there will be a notched disc for each station, kept in a device similar to a card index. When a station hits in, this notched disc will be taken from its peg in the file, put into a machine, and the machine started. The operation will not require over a second. The signal is permanently cut into this disc, and it cannot possibly transmit any number except the



right one. For this reason no verification on the part of the operators is necessary, except to check the number stamped upon the disc with the number of the street box received on the tape. Then, again, the movements of the engine companies will be automatically recorded.

"A considerable amount of the operator's time is now consumed in keeping track and recording the movements of apparatus from and to fires. In the new system the moment an engine company leaves its house an automatic record will be made at headquarters indicating this fact. When it returns a similar record will be made. In addition, a large map is provided in the operating room above the apparatus, upon which the position of every engine house is indicated by lamps. A white light indicates that the company is in quarters; a red light indicates that it is out, and a green light indicates that the circuit to this engine house is in trouble.

"When the operator has to decide whether or not there is apparatus available to go to any one particular location, a glance at the map will tell him the facts. In the new system individual lines are provided from headquarters to each and every engine company in the borough. At present a number of engine companies are connected on the same circuit. It is not possible at present to call any one particular company without disturbing others on the same circuit. In the daytime this is no disadvantage, as it is for the good of the service to keep the crews of all engine companies up to the highest notch of efficiency; but at night it unnecessarily calls a vast number of men who are not needed for the particular station coming in.

"When the new system is completed in Brooklyn, all its wires will be underground, and for that reason the amount of trouble encountered with circuits will be minimized. At the present time about one and one-half hours per day is consumed by the operators in testing circuits and attending to trouble. In the new system the task of maintaining the circuits in proper working order will be entirely separate from that of the operator; special men, called wire chiefs, having entire charge of that branch of the service."

As to the location of the fire alarm boxes, it is considered amply sufficient for the congested districts to have a fire alarm box located within 400 feet of any house or lot throughout the district. In less congested residential districts a distance of 800 feet is considered allowable, and in semi-suburban strictly residential districts, 1,200 feet. A distance of over 1,200 feet is considered excessive anywhere within city limits. At present the distance between fire alarm boxes throughout the borough varies from 200 feet to 3,000 feet. The ultimate layout of boxes contemplates the installation of at least one box on every second street intersection on every street in the borough. This would mean an increase in the number of street boxes from 1,259 at present to 3,671; an increase in the mileage of telephone wires of 1,147 to 8,720; all of the latter being underground, while at present but 36 miles is underground. It is believed that, with the funds now appropriated for this purpose, the entire business district and the more solidly built up residential districts of Brooklyn will have been provided throughout with modern telegraph fire apparatus by the close of the year 1914.

The work at present under way in the borough includes a new central building, and the modernizing of the street boxes and wires in what is known as the central Brooklyn and southwest Brooklyn districts, for which \$80,000 and \$60,000, respectively, have been appropriated. Probably the next district to be improved will be the entire waterfront from Newtown Creek at the extreme north to the Atlantic Ocean on the extreme

south. Under Chief Engineer Day is Valentine Fendrick, assistant electrical engineer in charge of the Brooklyn bureau, and Jerome Langer, as engineer-in-charge of the construction work in that borough.

## INCINERATION OF CHICAGO'S REFUSE

### Project to Operate the Municipal Pumping Stations by Power Generated by Combustion in High Temperature Incinerators.

As previously stated in these columns, Chicago's contract for disposing of its garbage, which had been held by a reduction company, expired some weeks ago without the city having made any provision for a substitute; and the authorities are now considering what is the best permanent solution, meantime adopting make-shift methods for preventing a nuisance.

One of the most interesting of the propositions made was contained in a report submitted to the Waste Commission at a recent meeting of that body, of which we present an abstract, giving the principal figures and arguments:

The city of Chicago is approximately 26 miles long and 9 miles wide, and has an estimated population for 1913 of 2,287,520; an estimated garbage tonnage for 1913 of 130,000, and an estimated tonnage of ashes and rubbish for 1913 of 650,000. It is divided into 35 wards. Its water is supplied from 12 pumping stations. In order to utilize the heat from refuse incineration to operate pumping plants, it was desirable to select those pumping stations whose locations made them centers of short haulage; then to so divide the city as to supply the requisite tonnage of refuse to destructors located adjacent to these pumping stations.

Accurate data on the tonnage of garbage and yardage of ashes and rubbish, for each of the wards, had already been compiled by the Efficiency Division of the Civil Service Commission;\* and accurate records of the amount of coal consumed, its cost in the bunkers, and the cost of labor for stoking, at each of the pumping stations were on file in the Bureau of Engineering of the Department of Public Works. It was estimated that an average evaporation of eight pounds of water per pound of coal was obtained, and that an average of one and one-quarter pounds of water would be evaporated per pound of refuse. The tonnage of the ashes and rubbish was estimated at 850 pounds per cubic yard.

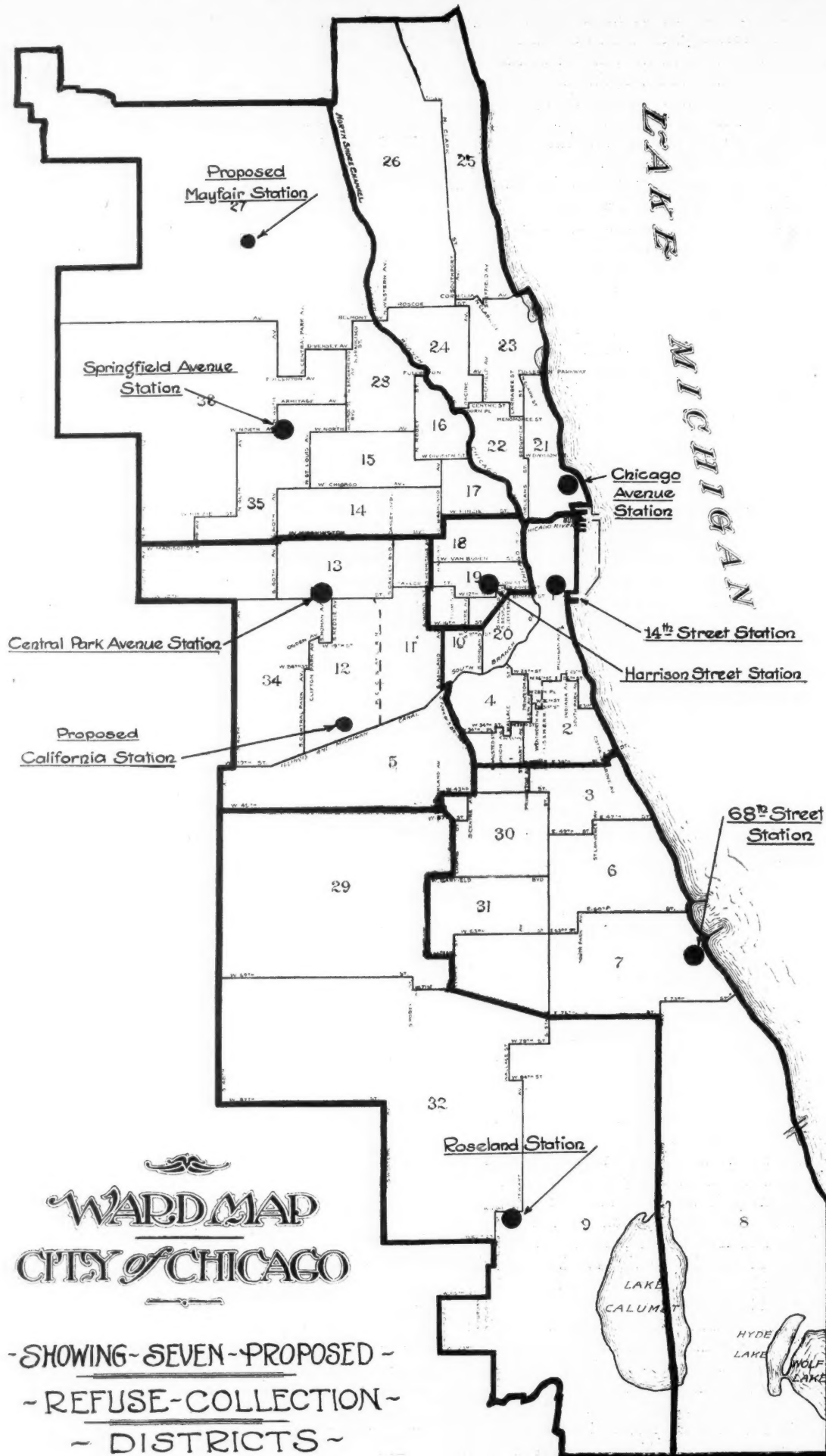
With the above figures, the city was so divided into seven collection districts that the refuse from each of these could be hauled economically to the site of one of the pumping stations located near the center of population of each district. Utilization of the steam power derived by incineration of the refuse was not considered for the remaining five pumping stations.

The map annexed shows the boundaries of the districts selected, together with the location of the particular power plant which each would serve.

The detailed service to be effected under this scheme is shown in the accompanying summary on page 793.

The maximum, as well as the average, tonnage for each district was tabulated to determine the daily capacity of destructors that should be installed. It is of particular interest, in this connection, that the maximum tonnage of mixed refuse is in the month of January, as this is the month of maximum pumpage of water. It is also of interest that the pumpage of water supply is increasing at the rate of 10½ per cent, and the mixed refuse tonnage is increasing at the rate of 11 per cent. Therefore it is claimed that the adoption of the proposed

\*This report will be abstracted in a later issue. The report of this commission on street cleaning is contained in this issue.



MAP OF CHICAGO, SHOWING WASTE COLLECTION DISTRICTS AND LOCATIONS OF PUMPING STATIONS.



## SERVICE TO BE RENDERED BY EACH OF THE SEVEN INCINERATORS.

Districts	Wards	Daily Refuse— Tonnage,		Per Cent of Load	Annual Coal Saving	Annual Labor Saving	Total Annual Saving
		Average	Maximum				
Springfield Avenue .....	{ 14th, 15th, 16th, 17th, 27th, 28th, 33d, ½35th }	425	480	99½	\$55,500	\$18,200	\$73,700
Chicago Avenue .....	{ 21st, 22d, 23d, 24th, 25th, 26th }	470	585	157	49,908	18,500	68,408
Central Park Avenue .....	{ ½5th, 11th, 12th, 13th, ½18th, 34th, ½35th }	350	395	92	46,000	22,000	68,000
Harrison Street .....	{ ½10th, ½18th, 19th, ¼20th }	164	220	98	23,600	9,150	32,750
14th Street .....	{ 1st, 2d, 4th, ½5th, ½10th, ¾20th }	288	346	87	45,500	14,600	60,100
68th Street .....	{ 3d, ½5th, 6th, 7th, 8th, 30th, 31st, ½32d }	380	406	66	40,000	11,500	51,500
Roseland .....	{ 9th, 29th, ½32d }	93	103	60	9,600	6,380	15,980
Totals .....		2,170	2,625	*94.2	\$270,108	\$100,330	\$370,438
*Average.							

system would prove practical for all months of the year and as efficient for the future as for the present.

The "per cent of load" column is included to indicate the proportion of the steam generated in the refuse destructor furnaces which would be required for the pumping load. It will be noted that the power supplied at the Chicago avenue station is greatly in excess of that required, and that supplied at Springfield avenue is practically the entire quantity demanded. The reason for this seeming inconsistency is that the city proposes to erect a new pumping plant, to be called the Mayfair station, at 49th avenue and Wilson avenue. A destructor adjacent to this plant can be served by the tonnage from the 24th, 25th, 26th and 27th wards, and the excess at the Chicago avenue and Springfield avenue stations would thus be removed. The scheme also permits of the future erection of another destructor adjacent to the proposed California avenue pumping station at The Bridewell. This plant could be served by portions of the 4th, 10th, 11th, 12th and 34th wards, and the large proportion of the loads at 14th street, Harrison street and Central Park avenue would thus be reduced.

The columns showing the coal, labor and total saving resulting from the proposed system are self-explanatory. It is claimed that the value of the by-product of high-temperature incineration would be much greater than that of the reduction process, in that, should the city of Chicago acquire the present private reduction plant by condemnation and continue to dump the ashes and rubbish, the maximum sum it could hope to obtain from the grease and tankage would be \$2 per ton. The revenue for 1913, therefore, on 130,000 tons of pure garbage would not be more than \$260,000. By the above detailed estimate the value of the steam by-product of incineration is given as \$370,438. This comparison is only of superficial interest, as the interest and depreciation on the plants, and the difference in the cost of collection of the two systems, are not considered.

To compare the exact annual saving in collection and disposal of the waste of Chicago by the method of complete destruction to the system in use at the present time the following figures are tabulated:

Fuel saving at the pumping stations, as per previous table .....	\$370,000
Collection saving, 130,000 tons garbage @ \$1.50 instead of \$3.94 per ton .....	317,000
Total saving .....	\$687,000
Interest @ 4% and depreciation @ 5% on \$3,000,000 —the approximate cost of the destructor plants .....	\$270,000
Labor, burning 780,000 tons garbage, rubbish and ashes @ 30c. per ton .....	234,000
Total charges .....	\$504,000
Indicating a net annual saving, over all costs, of .....	\$187,000

No item of profit has been made for the clinker, of which there would be 156,000 tons. At least one-half of this would prove a suitable substitute for crushed stone in mass concrete and could readily be valued at 50 cents per ton, adding \$39,000 to the above.

In explanation of the "Collection Saving" item in the above table it is claimed in the report that if the garbage is discarded in the same receptacle with the rubbish and ashes and collected in the same wagon and hauled the same distance the cost of the garbage collection would be the same per ton as that of the rubbish and ashes, and a saving of \$2.44 per ton would therefore result. This permits of another comparison between the reduction process and complete incineration—i. e., if it costs \$2.44 per ton more to collect the garbage separately, and the maximum value of the by-products of reduction is \$2 per ton, there must be a comparative profit of 44 cents per ton to cover the cost of incineration, aside from the value of the steam, clinker, etc.

The cost of burning is taken at 30 cents per ton, which is claimed to be conservative for efficient management of the large sized destructors recommended. In this connection it should be recalled that the chief engineer of the pumping stations would act as supervising engineer of the incinerating furnaces.

In concluding this report the author says: "It should be noted that the system advocated is in no way an experiment. The remarkable feature of the system, as outlined, is the exceptional opportunity offered by Chicago to derive the greatest benefits from it, on account of the many pumping stations located at such convenient points."

## REFUSE COLLECTION IN CLEVELAND.

The city of Cleveland, Ohio, in 1912 paid about \$230,000 for removing ashes and rubbish and received about \$30,000 from the sale of materials sorted from the rubbish, these including all metal, rags, paper, tin cans, bottles and other material of value. The paper is sold to a boxboard company at \$5.60 per ton in bags at the plant. The tin cans bring \$5 per ton loaded on cars at Cleveland, and are sold to a company which manufactures silk skirts, and which manufactures from the tin cans something which gives the skirts a better rustle. The metal, bottles, rags, etc., are sold to local dealers under competitive bidding. The rubbish gathered by the department which is not salable is used for filling low lands.

The same division of the public service department which collects the rubbish attends to the street cleaning also. The system employed is flushing with water discharged under pressure from tank wagons, supplemented

on the main thoroughfares and in the business section by the so-called "white wings." The annual expenditure for street cleaning is about \$280,000. In addition, \$11,000 is spent for cleaning catch basins, which is considered altogether too small an amount for properly performing this work.

## STREET CLEANING STANDARDS

### Data Showing Comparative Difficulties of Cleaning Different Kinds of Paving—Frequency of Cleaning—Efficiency Records of Laborers.

A report has just been published covering investigations carried on by the Efficiency Division of the Civil Service Commission of Chicago during the months of May to October, inclusive, of this year at the order of the City Council. This investigation dealt with the operations of the Bureau of Streets, and covered the subjects of street cleaning; collection and removal of garbage, ashes and rubbish; street repairs, and the general administration of the bureau. This report is, we believe, the most complete of its kind which has yet been prepared by any American city, and is especially notable for the fact that an effort has been made to establish standards and units of street cleaning by which to compare the work of different gangs or on different kinds of pavements. The report was, of course, prepared with a view to its local application; but the work done was so unusual and admirable, and the *principles* involved are of such general application, that we are presenting herewith an abstract in which we have endeavored to cover most of the points which are of the greatest general interest.

This work of investigation was directed by a technical board, consisting of three members from the Bureau of Streets and three from the Efficiency Division. The investigation was in the immediate charge of J. L. Jacobs, efficiency engineer in charge. At the outset, the board endeavored to obtain information concerning operations in other cities, and collected from twenty-five of the largest cities in the country information similar in most respects to that collected by us and published in our special street cleaning number a few weeks ago. They found, however, that, as we have more than once pointed out, it was very difficult to make any comparisons between work in the different cities because of a general lack of uniformity in standards and methods of accounting.

One of the immediate objects of the investigation was to bring about appropriations for street cleaning which would be based upon some scientific knowledge of the work to be accomplished. In Chicago, appropriations are made to the individual wards rather than to the department as a whole, and it was found that work in certain wards was costing two to five times as much per unit accomplished as in others.

It was therefore necessary to obtain at the outset some method of comparing work done or to be done. "It is believed that when a fixed standard is established of basing street cleaning schedules carefully on density of traffic, condition of pavements, character of frontage and kind of pavements, a definite relation will be found between the amount of street sweepings collected and the number of sweepers employed. At present it is found that different sweepers average daily collections of quantities varying from three-fourths of a cubic yard to three cubic yards. It has also been noted that street sweepings collected by regular "block" sweepers average about .0045 cubic feet per square yard. The weight of sweepings will, under ordinary conditions, approximate 36 pounds per cubic foot."

In connection with the street cleaning, it was considered especially desirable to establish a uniform service based upon scientific investigation of the needs and conditions of each district as determined by the traffic, pavements, character and tendency of growth of the population, etc.; to continually take traffic census and make time studies as a check on changing conditions and to determine a standard day's work for a laborer in each class of service; to ascertain and record efficiency ratings of all employees based upon the work done; to require all employees to wear a prescribed uniform; to require daily service reports to be made by each foreman; to establish a uniform system of accounts in the ward offices and in the central office, to make the results accomplished and unit costs of service comparable; to establish a corps of central office inspectors operating under the direction of the superintendent of streets to insure efficiency and uniform service throughout the city; and to carry on experimental work to determine the best methods of performing the work and teach these methods to the employees.

Work had already been begun in 1912 on a study of the methods, operations and movements of street cleaners and teamsters. These were made in different sections of the city where different conditions obtained, and both with and without the knowledge of the men studied. It appeared that a considerable number of the street cleaning force had no knowledge of how to do their work effectively with a minimum waste of time and energy. It was ascertained that there are at least thirty-eight distinct motions which a street cleaner makes, some of which were found to be unproductive, resulting in loss of time and energy and less effective street cleaning. It was learned that practically one-fifth of the time was consumed in wheeling push carts into alleys or to other temporary places for depositing the dirt swept up. The practice of hitting the broom on the pavement at the end of each stroke was believed to be never necessary on dry pavements and very seldom on wet pavements. "Effective and practical street cleaning can be obtained by bringing the brush down forcibly at the beginning of each stroke, thus reducing the work at least 15 per cent." One rather unexpected result of these studies was the discovery that "the time lost by street cleaners in dodging horses and automobiles where traffic is dense is unappreciable and does not exceed 8 per cent of the total time in the central loop district and not more than 2 per cent of the total time in outlying business streets. It is occasioned more through the congestion of traffic than through density of traffic."

"In the studies of the methods used in cleaning light traffic asphalt pavements, it was disclosed that after the morning thorough cleaning, three-fourths of the area to be covered during the remaining part of the day does not require thorough cleaning. Scoops equipped with rollers would be well adapted for use on such light traffic pavements and with them one man could patrol a much larger pavement area and still keep the pavement in good condition."

It was learned that work done by gangs is not as economical as division of work into individual assignments. In the case of gang work, considerable time is lost in conversation, and the good sweeper does no more work than the poorest. If it is desired to work men in groups rather than by the patrol system it would be better to give each man a definite uniform area to cover (as is frequently done by contractors in trench excavating) and require the foreman to see that each individual cleans his allotted area.

One of the great handicaps to efficiency in the service was believed to be the lack of incentive and of recognition of ability and efficiency. The established use of



units for measuring such efficiency would permit the elimination of this handicap.

#### FREQUENCY OF CLEANING.

"The conditions and factors which control the amount and the frequency of cleaning of any pavement, other conditions being the same, may be summarized as follows: 1. Density of horse-drawn vehicles and other traffic. 2. Width of street. 3. Character of district and population. 4. Location of street. 5. Proximity to unpaved streets and alleys. 6. Location of public buildings, parks, etc. 7. Kind and condition of pavement."

Traffic counts were taken on all the improved streets of the city, the total number of such counts being 1,403. Comparing these with traffic census taken three years ago showed that during that time the number of motor vehicles in the central portion of the city had increased over 300 per cent, while the number of one and two-horse vehicles had remained practically constant, and vehicles drawn by more than two horses had almost disappeared. It was determined that the density of horse traffic (the total number of horses passing divided by the width of roadway) is the principal factor which determines the number and frequency of cleanings which that street should receive. Time studies indicated that the only effect which the width of a street has upon the cleaning conditions is that due to the density of traffic per foot width of street. The traffic density seems to have direct relation to the amount of street dirt to be removed and is the important factor to be considered in deciding upon the number of cleanings per week which a street should receive to maintain a definite standard of cleanliness. "The quantity and volume of dirt directly attributed to horse-drawn vehicle traffic is readily appreciated when it is realized that on an average 1,000 horses excrete 500 gallons of urine and 10 tons of dung during a working day of 8 hours." The amount of dirt attributed directly to automobiles or streets railways is inappreciable. In deciding upon the number of times a given street should be cleaned, regard was also given to the presence of business, residential or manufacturing buildings, public buildings, parks, etc, and the proximity to unimproved streets from which dirt might be tracked.

"The number of cleanings per week which any street having permanently improved pavement will receive is

expressed by the equation:  $N = \frac{E}{CW}$  in which N equals

the number of cleanings per week; E equals total number of horse-drawn vehicles per 8-hour day; W equals width of roadway in feet, and C is a constant of cleaning." W may be modified in certain cases, as where the available roadway is restricted by standing vehicles. The co-efficients which were used in Chicago were as follows: Densely settled portion of the city, 2.1 for residence and 2.6 for business and manufacturing districts. Outlying portions of the city, 2.5 for residence and 2.8 for business or manufacturing districts. Minimums were adopted of three cleanings per week for the central part of the city and one cleaning per week for the outlying districts on hard pavements. Where the streets carry car tracks, six cleanings per week were adopted as the minimum where the cars travelled with a three-minute headway, five cleanings where the headway was three to ten minutes and four cleanings where it was more than ten minutes; these being the numbers applying to the central part of the city, while the cleanings for similar conditions in the outlying districts were 6, 3 and 3 respectively. Where the section of street under consideration contained a church, the minimum number of cleanings per week were fixed at six for a large church, three for medium size and two for a small church. Those for schools were fixed at 6, 5 and 4 respectively, and

those for hospitals, parks and general public institutions at 6, 4 and 2 respectively. These were adopted as minimums only. Where the equation quoted above gave a larger number of cleanings per week, those numbers were employed instead of the minimums.

#### AREAS CLEANED PER MAN.

A study was made of the amount of pavement of different kinds which could be cleaned by one man in an 8-hour day. Asphalt was taken as the standard since it was found to be the most easily cleaned, and it was learned that an able street cleaner working regularly and under instructions and by proper methods could clean 34,000 square yards in eight hours. It is not believed, however, that it is possible to attain a general standard exceeding 85 per cent of this, or 28,900 square yards; and it was estimated that during 1914 it would not probably be possible to secure results exceeding 63¼ per cent of the perfect standard, or 21,500 square yards.

The relative areas which could be cleaned, with all conditions similar except the character of the pavement, on the basis of an asphalt pavement in good condition as 100 per cent, were estimated as follows, these estimates being based upon the extensive time studies referred to:

Asphalt in fair condition, 90 per cent.  
Asphalt in poor condition, 80 per cent.  
Creosote wood block in good condition, 100 per cent.  
Brick in good condition, 74 per cent.  
Brick in fair condition, 47 per cent.  
Brick in poor condition, 37 per cent.  
Granite in good condition, 62.5 per cent.  
Granite in fair condition, 47 per cent.  
Granite in poor condition, 37.5 per cent.

The presence of street car tracks increases the difficulty of cleaning, the street car right of way being approximately 15 per cent harder to clean than the same kind of pavement where there is no track.

(These areas and the relations between them are, we believe, based entirely upon Chicago conditions of both streets and labor, and might not hold good in other cities. It would seem probable, however, that they would at least be more reliable in any city than mere guesswork based upon no definite information.)

The dirt removed from the streets is disposed of by three general methods in Chicago: (1) Filling low places back of curbs, low alleys and vacant lots adjacent to the streets cleaned, dirt being deposited here directly by the sweepers. (2) Hauling the dirt to low land within a radius of one mile. (3) Collecting the dirt at stations and hauling it to regular disposal dumps, which method is used in the more congested districts of the city.

It was found that a street cleaner collects an average of about 1½ cubic yards of street dirt per 8-hour day on improved pavements and about 2 cubic yards on macadam pavements where these are cleaned on the regular cleaning schedule. The carts carrying the loads contain some 4 cubic yards and some 3 cubic yards. It requires about one hour to load a wagon and 25 minutes for carting and dumping the same, the average speed to and from the dump being 2.7 miles an hour.

It was found that the cost of removing street dirt from macadam pavements was proportional to the cost of cleaning such pavements, the average cost of removal for the entire city being 42 per cent of the cost of cleaning, this being the ratio between the cost of team hire and the wages of macadam cleaners.

The average cost of cleaning 1,000 square yards of pavement by hand, exclusive of overhead charges and interest on cost and depreciation of equipment, was 36 cents in 1911 and 37.7 cents in 1912; this including all the different methods of street cleaning and the cost of disposing of the street dirt. The costs in the various

wards, however, differed very considerably, the costs in 1911 having ranged from 20 cents to 82 cents; the former being near the center of the city and the latter in one of the sparsely settled districts. In general it may be said that the lower costs were in the more congested parts of the city, although there were exceptions to this general rule. In 1912 the costs were somewhat more uniform, the minimum being, as before, 20 cents and the maximum 76 cents, while the next highest was but 56 cents.

It was ascertained that the cost of street flushing, including the cost of labor, teams and water, averages approximately 14 cents per thousand square yards.

"A closer check on the unit costs of street cleaning for different pavements in this city will be possible with the complete installation of the new schedule for street and alley cleaning and the uniform record system proposed in the latter part of this report."

Concerning this matter of records, we quote the report as follows:

"The establishment of uniform standards and definite units for keeping records and a check on the efficiency of the work and organization is one of the fundamental principles of efficient and economical control of administration. With the establishment of such uniform records and definite units it will be possible to cost-figure the work and to compare results. In recording expenditures and the efficiency of the personnel it will be possible to so classify the data of expenditure as to show the cost of each organization unit, as well as the cost of carrying on each activity or group of activities performed by the organization units and the total cost for each division of the work in relation to the results obtained.

"The complete set has been designed to accomplish the following:

(a) The installation of a uniform record system in all wards.

(b) The introduction of simple and definite forms which can be maintained by the average clerk.

(c) The reduction of all work and expenditures to definite units.

(d) The introduction of uniform sizes of forms so that they may be easily handled and easily compared."

Five forms relating to street cleaning are recommended in this report:

First: Sectional Street Cleaning, submitted by the ward clerk. Gives total time of each street cleaner (indicated by number) and unit cost of cleaning, including removal of dirt by teams. Figures entered daily from foreman's daily report. Headings: Section No.; Man No.; Laborer's Time—Started—Quit—Total; Area of Pavement, Yards; Cleaned %; Compensated Cleaning; Equivalent Asphalt; Cu. Yds. Collected; Costs—Labor—Team—total.

Second: Street Data, compiled by clerk on cards, each applying to one block of a street. Cards arranged and rearranged according to cleaning schedules. Gives location, length, width, area, reserve, paved by whom, traffic; whether business, residence or manufacturing; track, and headway of cars. The schedule in which this block is included is penciled on and changed when necessary.

Third: Practically same as first, but in card form, and for monthly reports. Gives monthly cost per thousand square yards.

Fourth: Cleaning by Gangs and Flushing. Entered daily by clerk from foremen's reports. Headings for Cleaning by Gangs—Gang No.; Foreman; Laborers (Nos.); Total No.; Teams (Nos.); Total No.; Cost—Labor, Teams, Total; Area Cleaned; Cu. Yds. Collected; Unit Costs—M. Sq. Yds.—Cu. Yd. Headings for Flushing—Crew No.; Team No.; Laborers (Nos.); Started; Quit; Total Labor; Teams, Total; Schedule; Area,

Fifth: Practically same as fourth, but giving summary for the month.

The first and fourth forms would be on sheets 5 by 8 inches. The third and fifth would be in duplicate, on cards 5 by 8 inches; the second on a card 3 by 5 inches. The first would be kept in loose leaf files for a time—at least until summarized in the third form.

### COMPETITIVE TESTS OF POLICE DOGS.

From Consular and Trade Reports of the Department of Commerce.

The breeding and use of dogs as auxiliaries of the police service have for many years been practiced with marked success in Belgium. While this practical use of dogs has not become so general in France, much interest is shown in the occasional contests arranged between dogs specially trained for police duty. Such a competition was held at Sanvic, a suburb of Havre, under the auspices of the Club Normand du Chien Pratique (Norman Club of Practical Dog) on August 10, 1913. The dogs entered in competition were subjected to the following tests:

1. To follow at the heel, with or without lead (10 points). The dog must not rove or leave his master.

2. To sit or crouch down and to stand (15 points). The dog must execute these movements at the order of his master.

3. To refuse food (20 points). The dog must refuse food offered to him in the absence of his master.

4. To find and bring a hidden object (20 points.) The dog to find and bring back to his master an object of some sort hidden in the ring.

5. Jumping over a fence (20 points). The fence must be at least 6.56 feet high and not higher than 8.2 feet.

6. Jumping over a hedge (10 points). The dog must clear a height of 3.93 feet.

7. Distance leap (15 points). The dog must clear two hedges representing a ditch 9.84 feet broad.

8. Keeping guard over an object (20 points). The dog must guard an object in the absence of his master, neither abandon it nor permit anyone to take it.

9. Defending his master, attacked unexpectedly (20 points). The master, taken by surprise, must be defended by his dog, who must commence and end the attack without word of command.

10. Running attack (20 points). The dog will be ordered to attack a man walking, and must begin and end the attack at the word of command.

11. Sham attack (25 points). The dog about to attack a man must be stopped when within a few feet of him and not touch him.

12. Hunting for the malefactor (20 points). A man hidden in a place designated by the jury while the dog is absent with his master. The dog must then discover the supposed evildoer and indicate his whereabouts by barking but not biting him.

13. Following a man into a house, and being fired on (25 points). A man enters a house and the dog must follow by jumping through an opening 6.56 feet high. The man escapes and closes the door behind him. The dog follows, leaving the house in the same way he entered it, runs after the man while being fired at, and ceases his pursuit at the word of command.

14. Conducting one or more prisoners (15 points). The dog must keep watch of the prisoners in charge of his master, attack without being ordered to do so anyone who tries to escape, and cease the attack at the word of command.

15. The call for help (20 points). The dog, placed in a house, shall, when his master calls for help, make his exit through an opening 15.7 inches in diameter, 6.56 feet from the ground, and defend his master if necessary.

For general qualities 25 points are accorded, so that the maximum number obtainable is 300. The dog classed first by the jury received a total credit of 285 points. Those competing (13 in all) were divided into two categories—police dogs and dogs for defense. The animals taking part in the contest were all described as shepherd dogs of different regional origin, such as Malines (Belgium), Beauce (center of France), Picardy (northern France), Germany, etc.



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## CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

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DECEMBER 11, 1913.

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## Measuring Street Cleaning Efficiency.

We have several times discussed editorially, and published contributions dealing with, the subject of units of measurement of work for comparing street cleaning records and expressing the efficiency of work done. But there is, as we have formerly stated, a considerable difficulty found in selecting units, due to the complexity of the qualifying conditions—nature of street surface, amount of traffic, amount of dirt removed, frequency of cleaning, etc.

We present this week an abstract of a report describing what is probably the most thorough investigation of just these points which has yet been made, so far as we know. It is a coincidence that these investigators adopted three grades of pavements, as was suggested in our November 6th editorial; but they have gone further and divided the records into the kinds of pavement as well as its condition of surface. What is most important, they have deduced from actual observation the relative difficulty of cleaning each of these—that is, the relative areas which can be cleaned in a given time by equally efficient men and methods. This furnishes a basis for comparing work on the various kinds and conditions of pavements.

The effect of amount of traffic they have considered, but only as a basis for deciding upon the frequency of cleaning which is desirable, and not as to its effect upon the time required for each cleaning. It is probable,

however, that their data would furnish this information. As a matter of fact, it is quite possible that, assuming the pavements to be kept reasonably clean, the amount of dirt swept up would have little effect upon the time required to cover a given area; and this would certainly seem probable in the case of all but patrol work. In the latter, however, under any but heavy traffic conditions it would seem that the entire area need be covered but once a day, the remainder of the time being devoted to traversing it hastily and removing only the occasional dirt, papers, etc., which have accumulated since the previous visit, and the amount of these would affect the time required.

We are not criticising the work done, since it seems to have been remarkably well adapted to solving the local problems under investigation; but merely pointing out questions of general consideration which remain for future investigation. It should be borne in mind also that these data refer to local pavements, men, methods and conditions, all of which will vary in different places; and similar investigations will, we hope, be made in other cities to give an idea of the importance of these local variations.

This report is of the greatest importance in showing what can be done in this line—proving that the evolving of units of this kind of work is not visionary, impossible, or even so very difficult. It should be done in every city, and we believe it will be before many years.

## Power from Refuse.

There have been a number of reports submitted by sanitary engineers in this country recommending the destruction of mixed refuse by high temperature furnaces and the utilization of the heat created by generating steam for power purposes. There are many instances of such utilization in England, and several in this country, of which the Milwaukee and New Brighton (New York) plants are probably the best known. The first on this continent was the plant at Westmount, Canada; and we believe that it is so far the only one which has utilized the full possibilities of power generation. This failure of United States plants to realize with anything like completeness the financial returns contemplated by the engineers designing them is generally not due to the failure of the plant to generate the power, but because, for one reason or another, the power is not utilized. In some cases the reason is politics—a desire to discredit a former administration or to retain a number of employees in city service; in others it is because the plants are not located convenient to points where power is desired, or because there is no purpose to which the municipality can apply the power.

On another page we publish a brief abstract of a proposition to apply this system to Chicago. It would seem that this plan as outlined is better calculated to secure at once a fairly complete utilization of the possible power than in any plant yet constructed in this country. For here we have a number of steam plants already in operation, and scattered so as to occupy convenient sites for centres of refuse collection. It should, therefore, be possible to use the steam generated from refuse to the full capacity as soon as it is available, rather than to first demonstrate to doubting officials the existence of the available power and then endeavor to secure a plant in which to utilize it.

There are undoubtedly other questions to be considered in deciding upon the best solution of Chicago's refuse disposal problem; but from the purely engineering point of view high temperature destruction combined with power generation and utilization seems to offer most attractive possibilities.

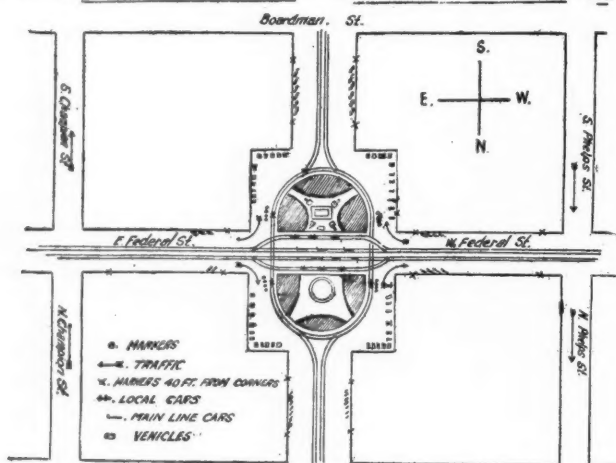
# The WEEK'S NEWS

Roads Completed—The Lackawanna County Road—Small ox in Wisconsin—To Standardize Hydrants—Police Organization during Indianapolis Teamsters' Strike—Ten Acres of Buried Fire—Demonstrate Efficiency of Auto Engine—Chicago's Garbage Situation—Western Towns Snowbound—Brenner's Prize Fountain Design.

## ROADS AND PAVEMENTS

### Plan to Relieve Traffic Congestion.

Youngstown, O.—The agitation for relieving the Central Square congestion of traffic has been renewed. With a view to solving that acute condition the plan given below



PLAN FOR RELIEVING TRAFFIC CONGESTION.

has been proposed. Vehicles, local cars and main line cars will, according to the plan, be obliged to follow separate routes marked out for them as they enter the square. Thus vehicles must pass along the sides of the square, while the local cars and main line cars must run on separate tracks.

### Roads Completed.

Niagara Falls, Ont.—The first concrete road in the government's good road system in Ontario, which extends from College corner 1,000 feet north in Portage Road, has been turned over to the government. Engineer Carl Gardner said that the concrete work had been finished, and that the pavement was ready for traffic. If the experiment proves successful, many miles of concrete will be laid in the rural districts in the next few years.

Dunkirk, N. Y.—The paving of the state road connecting Lincoln avenue with the paving in Railroad avenue has been completed. Constantine Brothers of Buffalo had the contract which they started in the early part of the winter. Considering the fact of some delay by reason of bad weather and of a temporary suspension of the work by orders of the state highway department, the work progressed rapidly.

El Paso, Tex.—The Fabens-Hancock road is now completed, according to the report of County Engineer Herbert Nunn, submitted to the commissioners. Capt. Nunn said that the road is in splendid condition for automobile or other traffic. The completion of this road gives El Paso County a continuous road along the Rio Grande for a distance of 66 miles. The total length of the Fabens-Hancock road is 22¼ miles. Eighteen and one-fourth miles were surfaced with gravel and 2 3-10 miles of new grade built and surfaced with 10 inches of adobe. Five culverts and one bridge were built, the bridge across the Alamo arroyo being 80 feet in length of five 16-foot spans with an elevation of nine feet. The bridges are designed to carry a 15-ton road roller. The county has purchased two mixers, with a capacity of 1,000 square yards per day, and it is reported that hereafter all of the county paving will be laid in a

scientific manner, being more substantial than under the old penetration method. The heating of the stone and asphalt, it is said, insures a uniform mixture. The total expense of the Fabens-Hancock road from Aug. 12 to Nov. 24 was \$13,021.53. The total amount of gravel hauled was 8,300 cubic yards. The bridges cost \$668.39.

Allentown, Pa.—With the completion of the asphaltting of Walnut Street, from Twelfth to Seventeenth, about four miles of asphalted streets were added to Allentown's quota or a total of twenty-five miles in all. The Barber Asphalt Company has made an excellent job of asphaltting the streets of Allentown. About 67,000 square yards is the amount of work performed by that company for new streets in Allentown this season. In addition to the four miles of asphalt laid this year the Asphalt Company has made numerous repairs. Harry W. Kress, the Allentown manager of the concern, has been a busy man keeping track of the work under way.

### Highway Work in Schenectady, N. Y.

Schenectady, N. Y.—Harry W. Cregier, county superintendent of highways, has made his annual report to the State Highway Department, and a copy of the same has been submitted to the Board of Supervisors. The report shows that during the fiscal year ending October 31, 1913, the total cost of highway work in Schenectady county was \$39,602.50. Highway repairs and improvements cost as follows: Duaneburg, \$11,358.60; Glenville, \$8,283.18; Niskayuna, \$4,826.23; Princetown, \$5,363.37; Rotterdam, \$9,771.12; total, \$39,602.50. The largest item of expense was \$23,544.99 for general repairs. No state roads are under contract in this county. The completed state roads in the county total 8.67 miles and all are in good condition. The total mileage of county roads is 49.701 miles. No county highways are under contract. The road work in the several towns of the county has been consistently progressive during the past year. A number of permanent betterments were made consisting principally of permanent culverts and bridges.

### Councilmen to Act as Highway Surveyors.

Warwick, R. I.—A new system of highway supervision has been established by the present council: instead of creating districts and naming highway surveyors to take charge of them, the work is to be done by members of the council themselves. There are 60 miles of town highways at the present time. According to the present plan each councilman will be responsible for the supervision of the highways in his district, the entire area to be divided up into sections of 12 miles, for each of the five councilmen. There are several reasons, it is said, why this plan has been adopted, one of the principal being that of economy.

### For Uniform Road Laws.

New York City, N. Y.—Through the co-operation of the American Bar Association and the American Highway Association the work of revising the road laws in different states has been undertaken with the object of codifying and simplifying them on a uniform basis. It was said that the work was to be comprehensive in its scope. A committee appointed by the American Highway Association will meet C. T. Terry, the chairman of the Committee on Uniform Legislation of the American Bar Association, on Dec. 12, at the Vanderbilt Hotel. The members of the Highway Committee are F. E. Wadhams, of Albany; A. B. Fletcher, State Highway Engineer, California; A. N. Johnson, State



Highway Engineer, Illinois; P. T. Colgrove, president of the Michigan State Roads Association, and J. E. Pennybacker, secretary of the American Highway Association. The American Highway Association believes that most of the road legislation in various states is antiquated and in many instances obsolete. Many of the road laws are a hundred years old. They are based on Colonial legislation, which, in turn, had been based on ancient English precedent. There is very little uniformity in the laws among the states, and it is felt that this fact puts obstacles in the way of those who are seeking to give the entire nation a network of improved highways.

#### Well-Constructed Highway Finished.

Scranton, Pa.—Winding through the mid-valley section of Lackawanna county from the city line of Scranton to the southerly line of Carbondale township a substantially constructed highway has just been completed. After two contractors had quit, the Gayner Contracting Company took over the job. The smoothly paved highway has a



Courtesy of Tribune-Republican.

#### BUILDING LACKAWANNA COUNTY ROAD.

foundation base of Portland cement concrete, five inches thick. The concrete was made with two mixers, each having a capacity of mixing and laying 1,000 yards of concrete per day. The asphaltic concrete surface used as a covering is composed of New Jersey rock mixed with hot asphalt. Trains of two cars carried the mixture from the Gayner yards at Mayfield to the scene of construction. The road is thirty feet wide, except in Mayfield, where it has a width of forty feet.

#### Large Bond Issues for Good Roads in Texas.

McKinney, Tex.—Good roads activities in Texas during the current year far exceed those of 1912 and from indications the amount of money made available for improved highways during 1913 will establish a record. Up to and including the first day of November, there was a total of \$5,285,000 voted for road improvements, while issues involving \$5,675,000 will be voted upon in the near future. In all there were sixty-six elections held in forty-eight counties and the aggregate amount of the bond elections was \$8,825,000. The largest bond election was held in Harris County, and the amount voted on was \$1,000,000, while the smallest was for \$5,000, in Calhoun County. Many of the counties held more than one election, and in Brazoria a total of \$585,000 was made available for road work in four counties. In Navarro County three elections netted \$475,000; Polk County, two elections, gave \$40,000, and Smith County, where four elections were held, \$405,000 was added to the road fund.

#### Oil 30 Miles of Roads.

Binghamton, N. Y.—During the past season 22.28 miles of State Highway within Broome County have been oiled under contract, the cost of which will be approximately \$22,280, an average cost of \$1,000 a mile. A fraction over eight miles of oiling also was done by the highway patrolmen. The contract work was undertaken by the Lane Construction Company, of Buffalo. The payment for this work comes out of a maintenance fund of \$65,000. The work of oiling has been practically closed for this year and the de-

partment is working on the program of maintenance for 1914. The work done in the way of general repairing by the patrolmen comprised fixing of the sluices and ditches, smoothing of ruts, cutting of weeds and brush and general top dressing, etc.

#### Pavement Collapses.

Chicago, Ill.—Two of the largest buildings in Chicago's loop district have been in danger as the result of a sudden cave-in in Randolph street. For a distance of 100 feet the pavement collapsed and sank to a depth of from six to twelve feet. Two large water mains and a dozen small gas mains were broken. Heavy damage was done to underground telephone and electric light wires.

#### Street Paving Progress in Salem, Ore.

Salem, Ore.—Expenditures totaling \$216,673.02, an increase of \$42,079.01 over last year, were made for street paving in the city during the present year, according to figures prepared by H. C. Tillman, City Engineer. The total for last year was \$174,594.01. Considerably more concrete was laid this year than last, the total being \$117,785.98, against \$95,448.24 last year, making an increase of \$22,337. Last year the bitulithic pavement laid amounted to \$41,983.14, and this year to \$43,902.48. Asphalt pavement aggregating the sum of \$50,304.15 was laid last year, and macadam valued at \$4,680.41.

#### Paving with Gravel.

Raleigh, N. C. The city has begun the paving of the block on West Morgan street, between Dawson and McDowell. Lillingston gravel, known as clay gravel, will be used. It has been used for the pavement on McDowell street, between Hargett and Morgan. This pavement is 486 feet long by 36 feet wide, and covers 1,944 square yards. The material used was 652 tons of clay gravel at 40 cents, \$260; 652 tons of clay gravel at 42 cents, \$273; labor, \$34; teams, \$22; total, \$592. The cost per square yard was 30 cents; the cost per running foot was \$1.22.

## SEWERAGE AND SANITATION

#### Sewer Injunction Dissolved by Court.

Bend, Ore., Nov. 24.—Circuit Judge Bradshaw has dissolved the injunction granted some time ago to restrain the city of Bend from collecting assessments levied on account of its new sanitary sewer now nearing completion. The suit was brought by eight property owners, whose assessments amounted to about \$2,000, and a number of others were interested who had withheld payment to await the outcome of this action. With the collection of these amounts the city can make its final payments on account of the sewer construction, and will shortly put the system in operation.

#### Sewerage Work in Gadsden.

Gadsden, Ala.—With the completion of a 1,200 foot sewer on Birmingham street, the city, has built two miles of sewers this year. Work has been started on a 700-foot sewer between Third and Fourth streets in an alley. The total value of the sewers built this year is given as about \$2,000. A bond issue of \$20,000 will be necessitated if the extension sewer projects in West Gadsden materialize.

#### Smallpox in Wisconsin.

Madison, Wis.—Unless more faithful observance of quarantine laws is effected, the state of Wisconsin will experience many epidemics of smallpox this winter, is the opinion of the State Board of Health. Over 2,000 cases have been reported this year. Centers of infection are in northeastern Wisconsin. There are many cases at Marinette, Peshtigo and Green Bay.

**Abolish Common Towel and Cup.**

Harrisburg, Pa.—Common cups and towels have been banished by the State Board of Health. Anyone violating the new regulation is liable to a fine of \$100. Glasses that have been used must be washed in boiling water, and towels must always be freshly laundered. Dr. Dixon, State Commissioner of Health, states that many communicable diseases can thereby be avoided.

**WATER SUPPLY****Open Water System.**

South Orange, N. J.—The Village of South Orange, with its 6,000 inhabitants, is obtaining its water supply from its new municipally-owned artesian wells and pumping plant. The ceremonies marking the opening of the system were in charge of Village President Francis Speir, Jr.; Trustees Edwin S. Allen, Frederick J. Lovatt and Harry J. Schnell, the members of the Water Committee. The plant includes a number of artesian wells in the valley below First Mountain, from which the water is carried by large pipes to a reservoir on top of the mountain. The reservoir is hewn out of solid rock and holds 50,000,000 gallons. The pumping plant is in the valley. The cost to date of the entire plant is approximately \$222,000. The first test of the water's pressure was made when the fire department was called out and gave a demonstration. The pressure gauge registered 139 pounds, or 30 pounds heavier than obtained from the old supply.

**Reservoir Dam Breaks.**

Abilene, Tex.—A break has occurred in the dam at Syth Lake Reservoir, effecting a great gap through which 600,000,000 gallons of water escaped. A large section of the land bordering on the reservoir was badly flooded. The city of Abilene had to go without water and for that reason the electric power plant was forced to shut down its boilers. The manufacturing plants were also unable to operate. An attempt was made to rebuild the cofferdam, but all that had been accomplished was swept away by a six-foot rise in Lytle Creek. It is estimated that \$20,000 will be needed to rebuild the dam with a concrete core.

**\$63,000 Loss Caused by Water Shortage.**

Vallejo, Cal.—Mayor W. J. Tormey estimates that the water shortage which has existed since July 1, 1912, has cost the City of Vallejo in the neighborhood of \$63,000. The expenditures causing this include \$3,179.44 for operating steam pumping plant on creek below diverting dam; \$11,000.27 for securing water supply from Lake Chabot, and \$6,267.59 for the pumping station at the Cereda Creek station. A loss in water receipts of \$20,827.43 is shown in the estimate for the year.

**Hydrants to Be Standardized.**

Oak Point, Cal.—An important improvement was ordered for this district by Commissioner of Public Works E. M. Wilder. Wilder has directed that all hydrants be standardized so that the same size wrench or spanner may open any of the hydrants in this district. Recently many complaints have been filed on account of broken nuts on the hydrants, caused by the use of different kinds of wrenches.

**Must Do Own Excavating.**

Oswego, N. Y.—Residents of Oswego who install city water in their homes next year will do so under three new rules which will go into effect at once. The enforcement of the rules will save the department much trouble and considerable expense. In the past the department has done some excavation. Hereafter all excavations in connection with the installation of a water service must be done by the person applying for the service. The second rule is that all persons applying for a service and opening an excavation must file a bond to properly protect the city in case of liability. The third is that no trench can be opened until the department gives permission in writing at the office.

**Water Famine Threatened.**

Huntsville, Ala.—Many portions of northern Alabama are bordering on a water famine due to the drying up of streams and springs that have never been known to go dry before. A great many wells are dry, and hundreds of families are hauling water from the more reliable springs, particularly the Huntsville spring, which is showing hardly any effects of the drought. Heavy rains are needed not only to replenish the water supply, but to put out dozens of forest fires that are burning in every direction from this city.

**Get Water Main.**

Raleigh, N. C.—The water has been turned on through the new main which has so long been demanded. It is 16 inches in diameter and extends from the pumping station across the city farm. Raleigh has been in great danger in case of any fire of a size to demand direct pressure, for the firemen knew that in all probability the old main would give way under it. The new main now in commission has a pressure that can be very largely reduced and yet give much greater efficiency. It is thought 135 pounds pressure will do the work through the ample main instead of 200 pounds.

**Municipal Plant Earns \$8,000 in One Month.**

Fort Smith, Ark.—W. H. Bruce, commissioner of public property, has filed his report for the month of October, which shows that the water plant earned more than \$8,000 during that month and increased its balance in the hands of the superintendent. The report is as follows:

Balance on hand, September report.....	\$16,049.06
Earnings for October.....	11,558.65
Received from city for expenses.....	3,328.98
Operating expense .....	3,328.98
Transferred to city treasury, Oct. 22.....	7,035.15
Transferred to city treasury, Nov. 20.....	4,190.07
Uncollected accounts, city.....	14,580.00
Uncollected accounts, private consumers.....	1,802.19
Balance on hand.....	16,382.49

**STREET LIGHTING AND POWER****Gainesville Illuminated by Municipal Plant.**

Gainesville, Fla.—The streets of Gainesville are now illuminated by current from its new municipal electric plant, which has been built on a modern scale. The new plant, including the extension of the water works systems, cost in excess of \$100,000, and will, it is believed, be sufficient to supply Gainesville's needs for several years to come. For nearly twelve years the streets of the city have been illuminated by contract with a private company, and the cost to the city has averaged over \$3,600 per year. The new plant was constructed under supervision of the J. B. McCrary Company, Atlanta, Ga.

**Suburbs to Be Lighted by Chain of Companies.**

Harrisburg, Pa.—A chain of electric light and power companies, covering all territory within a radius of 14 miles north, south and east of Harrisburg is in prospect. Towns and communities which have never seen electric light will be reached by this new combination. Applications will be made Dec. 22 to Governor Tener for charters for seven new electric companies in Dauphin County.

**Additions to Lighting System in Rochester.**

Rochester, N. Y.—A stretch of six miles of well lighted streets has been added to the lighting system of Rochester. Work on the new lighting system of West avenue has progressed as far as Reynolds street, and the new magnetite arc lamps will be installed to the city line by the end of this month. In addition to the work in West avenue, the Rochester Railway & Light Company has started the work of installing the new lights in Main street East. The lamps will be extended on ornamental brackets from the trolley poles, and that will eliminate the necessity of putting additional poles along the street. The placing of additional lights creates quite a problem for the lighting



company. The transformers are able to supply but 50 lamps each, so that when more lamps are placed it means additional transformers in the various stations. New circuits must be made, too, and the placing of additional cables must follow in some streets.

#### Lighting Rate Reduced.

Bridgeport, Conn.—Mayor Wilson has succeeded in having the United Illuminating Company reduce the city's expense of electric arc light from \$71.17 a year each to \$67.52½ a year each, so that the city may have 39 new arc lights for the same amount of money it is now paying for the 733 arc lights it is using.

#### Ordinance Makes Deposit Invalid.

Richmond, Ind.—To place the city on record as taking some definite action on the question of the deposit rule, Council passed an ordinance on the recommendation of City Attorney Bond, making it illegal for the Light, Heat Power Company to demand a cash deposit or guarantee as a condition to furnishing gas to consumers. The provisions of the ordinance are that it shall be illegal for any company operating in the city for the distribution of natural or artificial gas, or any officer or employee, thereof, to demand a money deposit or guarantee as a condition to the furnishing of fuel. The only exception to this is in the case of transients, sojourning in the city for a brief time and persons who are not bona fide residents of Richmond.

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## FIRE AND POLICE

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#### Policing in the Indianapolis Teamsters' Strike.

Indianapolis, Ind.—The condition of imminent disorder growing out of the general teamsters' strike in Indianapolis has caused Mayor Wallace to issue a proclamation asking for every citizen's co-operation in suppressing any disturbances. A military system of police patrol was effected last week. Mounted policemen were deployed in the business district in pairs and many were held in reserve. The entrances to business houses in important streets were guarded by police. Volunteers have organized themselves into day and night shifts to keep armed guard. They were vested with full police powers. As a result of the strike many annoying conditions such as the accumulation of garbage arose.

#### Proposes School for Policemen.

Duluth, Minn.—Chief C. H. Troyer will recommend the establishment of a school for policemen, in which every member of the force will be enrolled and instructed each week in his duties and rights. The school for policemen appealed to the chief so strongly that he plans to take the matter up with Commissioner Hicken. The chief would take charge of the classes and lecture to the officers himself, with the assistance of the city legal department. The establishing of the school would mean very little expense to the city.

#### Plans for Traffic Squad.

Washington, D. C.—Plans for the organization of a traffic squad to enforce strictly the regulations governing travel on Washington streets are under consideration by District Commissioner Siddons and Major Sylvester, Chief of Police. The police department does not maintain at present a traffic squad. According to Commissioner Siddons, plans for the organization of such a squad are well under way and consideration is being given to the question of patrolling certain sections of streets during the rush hours. The commissioners have the question of revision of the traffic regulations under consideration and may order a number of changes in the existing rules.

#### Aqueduct Squad to be Incorporated in New York Police.

New York, N. Y.—A bill has been passed by the Board of Aldermen to add to the New York City police department every desirable member of the aqueduct police, who

have been noted for their efficiency. Members from each aqueduct police precinct have been ordered to appear in police headquarters in the Metropolis for examination. It is feared that the withdrawal of the aqueduct police may result in unsafe conditions in the towns now patrolled by them.

#### Ten Acres of Buried Fire.

Savannah, Ga.—The Fire Department has been called upon to fight a curious underground fire that has been burning over an extent of ten acres of land south of the city for several weeks. The fire is slowly consuming some substance a few feet under the surface. The firemen fear to open up the earth and thus give the smothered blaze a chance to get a firmer hold, and, as the underground conflagration is about a mile from the nearest fire plug, there is no way to get water to it. The fire is located in an old city garbage dump.

#### Fire Alarm System Completes Modern Equipment.

Pendleton, Ore.—A 20-box fire alarm system has been installed in the city and when completed will give Pendleton a modern fire-fighting system. An auto combination chemical and hose truck was installed some time ago, and has already been called out to several fires. The complete new system is expected to lessen the insurance rates.

#### Signal System Accepted by Hartford.

Hartford, Conn.—The new Gamewell police signal system, which has been in course of installation for several months, has been turned over to the police board. A thorough inspection will be made, after which the system will be placed in operation.

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## MOTOR VEHICLES

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#### Efficiency of Engines Demonstrated.

Buffalo, N. Y.—The two new auto fire engines bought from the La France Company, of Elmira have been tested and were found to be very efficient. They were guaranteed to pump 1,400 gallons of water a minute, and they came up to the guarantee. With two 2½-inch lines of hose the engines for more than half an hour threw 1,400 gallons of water each minute. The test on distance was just as satisfactory and demonstrated that the auto engines can throw higher streams than any apparatus in the department. The test was under the direction of Master Mechanic Andrew Keller. Commissioners Seibert, Person and Burgard, with Chief McConnell and Assistant Chief Murphy, were present and were high in praise of the engines.

#### Auto Engine Makes Good Speed.

Cincinnati, O.—The new auto engine has been tested last week and found to be in every way satisfactory. In the speed test the engine made 40 miles an hour. The apparatus carries 300 feet of chemical hose, 2 tanks of chemical and will be equipped with hooks and ladders.

#### Receive Auto Pumping Engine.

Swampscott, Mass.—The new La France automobile pumping engine has arrived at Swampscott from the works of the American La France Company in Elmira, N. Y. Representatives from the American La France Company unloaded it from the cars and drove it into the central fire house on New Ocean Street.

#### Get New Tractor.

Holyoke, Mass.—The new Knox auto tractor for the fire department has arrived in Holyoke. It was inspected by the fire commissioners and the heads of the fire department and meets the requirements of the department in all respects. The new tractor is a splendid addition to the apparatus of the Holyoke fire department. A workman from the Knox factory is in the city and will remain there until the commissioners are satisfied that the tractor is in perfect working order.



## GOVERNMENT AND FINANCE

### Municipal Depository Banks Buy Bonds.

Chicago, Ill.—City Comptroller John E. Traeger has begun a new method of disposing of the corporation bonds which he has been selling over the counter at par. Officials of thirty-nine of the outlying banks were called into conference relative to the depositing of city funds for the year 1914. Mr. Traeger explained that each of the banks would be expected to buy city bonds at par to the extent of 10 per cent. of the amount of money received on deposit from the city. The bank officials practically agreed to this, according to Deputy Comptroller Gosselin. There are fifty-six of the outlying banks, used as depositories by the city, and Mr. Gosselin estimates that about \$250,000 worth of bonds can be sold to these institutions.

### Commissioners Reduce Own Salaries.

Birmingham, Ala.—The City Commissioners announced reductions in the annual budget amounting to \$83,082, of which 75 per cent is city salaries. The commissioners, in spite of the fact that their salaries are fixed by law, decreased their own pay by a substantial amount. It is estimated that the city will save about \$300 per day.

### Provide for Merit System in New Charter.

St. Louis, Mo.—At the last meeting of the Board of Freeholders of the city of St. Louis, Mo., which is engaged in drafting a municipal ownership charter, it was unanimously decided to incorporate a provision for including the merit system. It was voted as the opinion of the board that all examinations shall be practical and shall relate solely to those matters which will reasonably test, in a practical way, the capacity of the persons examined to perform the duties of the position for which the applicant or applicants are seeking appointment; and that this provision, or something similar to carry out the purpose and effect of this provision, be incorporated in the charter. It was furthermore determined that the head of the department should be given the right to discharge for any cause whatsoever, and that, should the discharged man require it, a statement be given by the discharging officer of the reason for said discharge.

### Cleveland to Issue Notes.

Cleveland, O.—As there is a deficit of over \$100,000 in the general fund, the Council has passed a resolution authorizing the loan of \$400,000 to meet payrolls and current expenses for the remainder of the year. To raise the \$400,000 the city will issue notes payable in six months and bearing 3½ per cent interest. Mayor Baker, in a statement to the Council, said that the cause of the deficit was the present tax law limiting the income of cities and to the larger number of bills left unpaid by the former administration.

### Income Tax on Personal Property.

Harrisburg, Pa.—Figures from Harrisburg furnish the basis for a comparison of personal property returns made in the last two years. They also give an estimate of what the total return next year will be under the new act that makes mandatory the declaring of all personal property instead of 75 per cent. Returns to the state from personal property taxes during 1913 amounted to \$5,610,045.13, which is 4 per cent on \$1,402,511,272.85. The latter figure is a gain of \$76,406,657.73, as compared with last year. It is expected the total in taxes next year will exceed \$6,000,000.

### Ohio Mayors to Meet.

Youngstown, O.—Mayor Hartenstein has received a letter from Mayor Baker, of Cleveland, stating that a meeting of mayors of Ohio cities will probably be held in Columbus in December to consider the situation in which the cities are placed because of the reduction of income due to limiting the number of saloons under the license law. The object of the meeting will be to secure some relief at the coming legislative session.

## STREET CLEANING AND REFUSE DISPOSAL

### Chicago's Garbage Situation.

Chicago, Ill.—Pending definite action by the Board of Aldermen, the streets in Chicago have not been relieved of their accumulation of garbage. The advisability of using either the Hirsch method of treating the city's garbage or the services of the Illinois Rendering Company has been hotly debated in the Board. After much wrangling it was voted to have the company's counsel draw up a tentative contract to embrace the following points:

The carrying out of the renovation plans to the extent of \$125,000 or more if necessary, up to \$120,000, if the company is permitted to rebuild the plant without city supervision.

The rendering company to pay 7 cents, or the usual meter rate, per 1,000 gallons of water over an average free allowance of 2,000,000 each twenty-four hours.

A straight three years' contract which the city can renew for two additional years by giving six months' notice. The original proposition was for five years.

The improving of the present pumps of the Chicago Reduction company to the extent of at least \$2,000.

The city must deliver garbage 90 per cent. pure, and any small quantities that the waste commission may desire for experimentation will be donated.

### City Hauling Declared Valid.

Beaumont, Tex.—The validity of the ordinance creating a garbage department in Beaumont has been questioned in the district court. It was asserted that the ordinance is unconstitutional because it is in restraint of trade. Judge J. M. Conley in sustaining the ordinance said: "The centralizing of the business in the garbage department makes it possible to have all trash hauled in a safe and sanitary way, in screened wagons and to the point designated by the city as a dump. If there was not a monopoly of this business the numerous drivers of wagons would be hauling such rubbish or trash with little or no sanitary precautions and no measures to prevent its being scattered over the streets." The judge concluded that sanitary ends were accomplished by the garbage department, which established its validity.

### Should Pay City for Garbage.

Philadelphia, Pa.—Garbage contractors should pay the city for the waste they collect instead of receiving large sums for "disposing" of it, according to Prof. J. Linn Barnard of Philadelphia. Having made a special study of the garbage question, he believes that the facts indicate clearly that garbage is sufficiently valuable to make it worth buying by a firm that is in a position to make proper use of it.

### Start on Mid-Winter Clean-Up.

San Antonio, Tex.—Last week the mid-winter clean-up campaign was inaugurated with the cleaning of the First Ward. The Citizens' Auxiliary, under whose auspices the campaign is being conducted, will devote a week to each ward. An executive committee has been appointed to devise means of accomplishing the best results.

## MISCELLANEOUS

### City Goes into Junk Business.

Kansas City, Mo.—Kansas City is going into the junk business to make a profit off its own waste and incidentally to provide work for every needy person this winter. The city is not going into competition with the regular junk dealers, because most of the junk that is gathered up will be sold to the junkmen. Hundreds of men who work on railroads and contracts in the summer drift into Kansas City in the winter and the problem of keeping them after their money is gone is great.

### Cities Buy Plants.

Madison, Wis.—With an order of the railroad commission toward turning over the property of the Beaver Dam Water Company to the city at \$133,000, thirteen plants have been purchased by cities under the Wisconsin utilities law. In three cities the properties have been taken over in the past two weeks, and three cases are pending in which the valuation has been almost completed. The thirteen cities

paid an aggregate of \$2,404,900 for the plants. In 1907 the legislature passed a law permitting utilities to take out indeterminate permits. The law empowers the city to take over a utility at any time at a valuation to be fixed by the railroad commission. Under this law practically all of the water plants of the state have become municipal enterprises. In Manitowoc the city has purchased the electric and water plants and there is agitation for the city purchasing the gas plant. Cities that have purchased plants are:

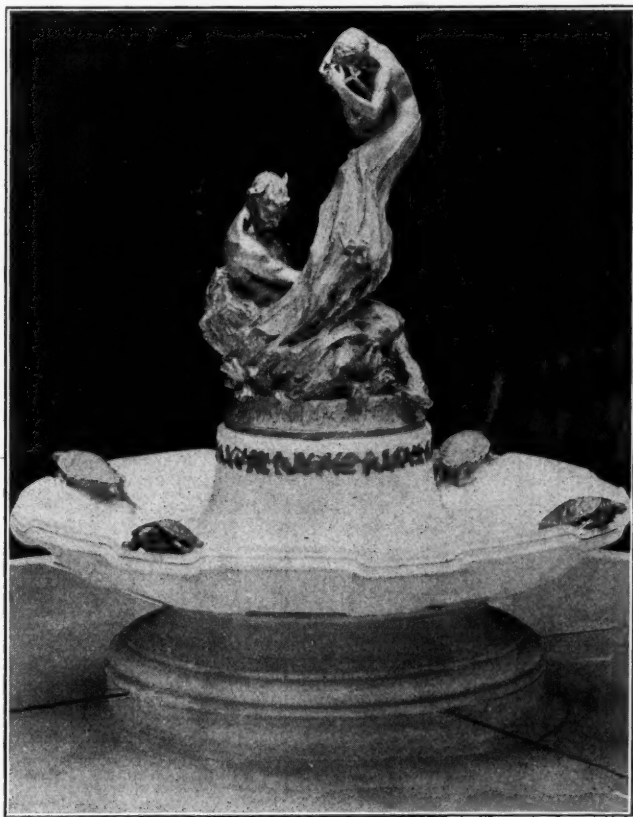
Cashton (electric) .....	\$3,100
Appleton (water works) .....	255,000
Lake Geneva (water works) .....	86,500
Manitowoc (water works) .....	236,000
Brodhead (electric) .....	40,000
Manitowoc (electric) .....	137,500
Antigo (water) .....	128,800
Fond du Lac (water) .....	320,000
Sheboygan (water) .....	415,000
Kaukauna (electric) .....	50,000
Whitewater (water) .....	75,000
Oshkosh (water) .....	525,000
Beaver Dam (water) .....	133,000

#### Municipal Paving Plant.

Columbia, S. C.—Columbia is to have a municipal paving plant. This was decided by council, and the plant will in all probability be put into operation in 1914. The city is doing extensive paving work and the members of council believe that the plant will save much money each year.

#### Pittsburgh Gets Fountain Designed by Brenner.

Pittsburgh, Pa.—Victor David Brenner, the medalist who designed the Lincoln penny, has been awarded the first prize for the design accepted for the \$50,000 memorial which will be erected in Pittsburgh to Mrs. Mary E. Schenley. The award was made at a joint meeting of the Art Commission of Pittsburgh and the Schenley



BRENNER'S PRIZE FOUNTAIN DESIGN.

Memorial Commission. The design, as shown below, is that of a fountain, which is to be placed at the entrance of Schenley Park, donated to the city of Pittsburgh by Mrs. Schenley during her lifetime. The model submitted by Brenner represents a nymph leaning over Pan singing a song, while holding a lyre in her hands. The completed structure will be 25 feet high and will stand in a fountain on a base 8 feet in diameter. The award carries with it a cash prize of \$1,000. The second prize, \$800, went to Hanf Schuler, of Baltimore, and the third, \$500, to Henry Kitton, New York.

#### Municipal Laundry in Vienna.

Vienna, Austria.—The Vienna municipality has approved of the transformation of the water-pumping works into a laundry for the city humanitarian institutions. It is to have a capacity to turn out annually 1,800,000 kilos of laundered articles and provision to increase this capacity to 2,500,000 kilos annually, the cost of construction to be about \$113,000.

#### Severe Blizzard Strikes Western Towns.

Denver, Colo.—Reports received indicate that Cripple Creek, high in the mountains, was in a critical condition, due to the blizzard which has struck that gold mining town. The power plant has been burned, and the town was in darkness, save for the light of candles and coal oil lamps. Fifteen feet of snow cover the district. Six business houses were destroyed by the wind, and scores of other buildings were damaged. Many reports of missing men have been received in Colorado Springs from mountain points and rescue parties led by United States rangers have gone in search of the missing. In Denver, drags carrying coal, sleighs filled with milk cans and wagons laden with provisions have broken what had begun to be a serious coal and provision famine because of the more than three feet of snow which covered the city and blocked traffic for three days.

Topeka, Kan.—It has been snowing for several days throughout northwestern Kansas. The drifts are being piled high by a stiff northwest wind. Only local trains are being operated on the Union Pacific between Ellis, Kan., and Kansas City.

#### Municipal Trees in Thirteen Cities.

New York, N. Y.—Thirteen cities scattered throughout the country, following the example set by New York last winter, will have community Christmas trees this year, according to an announcement by the "group of idealists" who provided the first tree in Madison Square Park a year ago, and who have planned another tree this year. The cities are Philadelphia, Chicago, Boston, Pittsburgh, Baltimore, Rochester, Cincinnati, Newark, Minneapolis, Washington, Hartford, Utica and Schenectady. There will be band and choral music in New York on Christmas night this year. Should the weather be favorable, celebrated soloists may participate in the program. There will also be a children's day celebration during Christmas week.

#### Town Votes "Dry."

Salem, Ore.—Returns from the seven wards in the city indicate that the prohibition forces at the city election carried an amendment to the city charter forbidding the licensing of saloons by a fair majority, and it makes the second time in less than a month that they have scored a victory over the "wets." The saloon men have obtained a temporary injunction against the county court proclaiming the town dry pursuant to the local option election, and suit will be instituted to restrain the city recorder from announcing the result of the charter amendment.

#### Petition for Commission Government.

Monroe, La.—The advocates of a commission form of government have presented a petition to the City Council asking for an election to decide whether Monroe will adopt the plan or not. The petition contained 357 names. The law governing the calling of an election to decide whether or not the plan will be adopted requires the signatures of at least 25 per cent of the qualified voters. The petition containing more than the required number was referred to Mayor Forsyth, with full power to act.

#### Leases Permanent Camp Sites.

Pittsburgh, Pa.—The State Department of Pennsylvania has leased twenty-four permanent camp sites in ten different counties. The leases are held by churches, schools and individuals. Most of the lessees use only tents, but some of them have erected substantial cottages. Each camp site is limited to two acres, and most of the lessees have taken the limit.



## LEGAL NEWS

### A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

#### Road Funds—County and City.

City of Albion v. Boone County.—When a county has collected money for the road fund upon property of a city or village, one-half of such money belongs to the city or village, and the officers of the city or village have no power to compromise the right to such money.—Supreme Court of Nebraska, 143 N. W. R., 749.

#### Streets—Abandonment.

Hall v. City of Olean et al.—It rests with the municipality to open up so much of a tract dedicated and accepted for a street as public necessity may, from time to time, require, and failure to work and use a part thereof does not constitute an abandonment of such part.—New York Supreme Court, 143 N. Y. S. 664.

#### Local Improvement—Review.

City of Chicago v. Marsh et al.—An objection to a paving assessment that the ordinance directed the roadway to be paved to a width of 42 feet, whereas the roadway had been previously established at 38 feet, and the engineer's estimate and recommendation contained no reference to a proposed change, would not be reviewed where the abstract did not show that the width of the roadway had been changed.—Supreme Court of Illinois, 102 N. E. R., 170.

#### Water Works—Neglect to Repair Mains.

Blake-McFall Co. v. City of Portland.—Where a municipality maintains a water works system for its own advantage, and not as a governmental agency, it is liable as an individual or private corporation, and the mere fact that the water works are used in part for public purposes does not relieve it from liability for an injury caused by the negligence of its servants in repairing or neglecting to repair a main; the income from the water works forming a considerable part of its revenues.—Supreme Court of Oregon, 135 P. R., 873.

#### Control of Streets—Structures above Surface.

Baillie v. City of Wallace.—Held, under the statutes of this state, that power is conferred upon municipal corporations in respect to streets within their limits, and that it is their duty to keep them in a reasonably safe condition for use by travelers in the usual mode of travel, and that they are liable in damages for injuries resulting from the neglect of such duty, and this rule extends not only to the surface of the street or sidewalk but also to structures over them.—Supreme Court of Idaho, 135 P. R., 851.

#### Purchase of Water Plant.

Janes et al. v. City of Racine et al.—The acquisition by a city under the general public utilities act of the plant of a water company, which has accepted an indeterminate permit, is not a condemnation, but a "purchase"; St. 1911, providing that a public utility by acceptance of such a permit shall be deemed to have consented to a future purchase of its property by the city for the compensation, and under the terms and conditions determined by the railroad commission. The vote of the electors of a city to purchase, under the public utilities act, a water plant authorizes the city, without further vote by them, to issue bonds, if necessary, to procure the purchase money.—Supreme Court of Wisconsin, 143 N. W. R., 707.

#### Paving Contract—Interest of City Officer.

O'Neill v. Town of Auburn et al.—Where a paving contractor, after the specifications had been changed so as to require a concrete base instead of a rock base because of the scarcity of rock, and after a carload of cement owned by him had been condemned by the inspector, purchased cement in the open market from corporations in which the mayor and a councilman were interested, payment therefor being made in the ordinary course of business, and not dependent upon payments received by the contractor from the town, the mayor and councilman were not interested in the contract for the paving, so as to

render that contract void under Rem. & Bal. Code.—Supreme Court of Washington, 135 P. R., 1000.

#### Maintenance of Water Mains—Liability.

Pacific Paper Co. v. City of Portland.—A city was liable for the negligent construction and maintenance of a water main maintained and used for fire protection, but which was connected with the general water system of the city used to supply water for domestic purposes and sale, and from which some water passed into other mains and was delivered to private consumers, where, under the instructions, the jury necessarily found that it was a part of the general water system of the city, receiving its supply from the same source as the other mains, that the care necessary in its construction and maintenance was governed to some extent by the force it received from such system, and that they were unable to detach it from such system.—Supreme Court of Oregon, 135 P. R., 871.

#### Water Pipe Line—Change in Plans—Extra Work.

McHugh v. City of Tacoma.—Where the original plans for the construction of a water pipe line for a city provided for the construction of a line fifteen miles long, to be located upon a definite route, a change of plans which changed the line for a distance of six miles to a location two and one-half miles from the original line, and required the ditch to be dug for a distance of six miles nearly two feet deeper than as originally planned, through hardpan soil which was more difficult to work in, constituted "extra work" within a provision for extra work in the contract. The parties to a contract with a city for the construction of a water pipe line could agree upon the cost of certain excavating, and such agreement would be binding upon them.—Supreme Court of Washington, 135 P. R., 1011.

#### Assessment—Appeal—Bond.

Johannsen et al. v. City of Colfax et al.—Code, providing that an appeal from a special assessment may be taken by serving a written notice thereof on the mayor or clerk, and filing a bond for costs, to be fixed and approved by either of such officers, imposes no affirmative duty on either the mayor or clerk to fix the amount of the bond, neither being required to act in that behalf until requested to do so, and hence the fact that the mayor, on being served with notice of an appeal, indorsed on the back thereof "Appeal bond fixed at \$100," but did not notify plaintiff or his attorney thereof, did not relieve plaintiff from the duty of having the penalty fixed and filing the bond within ten days.—Supreme Court of Iowa, 143 N. W. R., 500.

#### Charter Elections—Statutes.

Attorney General ex rel. Baum v. City of Saginaw et al.—Pub. Acts 1909 provides that all charter elections held under the act except as otherwise provided by law or ordinance shall receive such publication and notice as the legislative body may determine and shall be arranged for, held, and conducted by the same officers and in the same manner as near as may be as general biennial fall elections. Held, in view of such provision, that other provisions of the act relative to the time of holding such elections are not mandatory, so that where the officers, through a mistaken sense of duty, have omitted to perform their duties within the time prescribed, they may be compelled to act after the time limited has expired.—Supreme Court of Michigan, 143 N. W. R., 598.

#### Grade Crossings Elimination—Cost to Railroads.

City of Spokane v. Spokane & I. E. R. Co. et al.—A city may institute the necessary proceedings to bring about the separation of a street grade from that of the railroads crossing it, and compel the railroad companies to pay such proportion of the cost as may be just, upon the equitable principle that the railway tracks created a dangerous situation which made the change necessary.—Supreme Court of Washington, 135 P. R., 636.

#### Assessments—Equitable Relief.

Haugan et al. v. City of Chicago et al.—It is no ground for equitable relief against a judgment that it is wrong in law or fact, if the complaining party has had an opportunity to make a defense at law and failed to do so.—Supreme Court of Illinois, 102 N. E. R., 185.

## THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals.

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

## ROADS AND PAVEMENTS.

**Roads, Unsurfaced.** By W. S. Keller, state highway engineer of Alabama. Ill., 1½ pp., Southern Goods Roads, November, 10 cts.

**Embankment in Road Work.** Proper and Improper Settlement. Ill., 3½ pp. By G. C. Warren, American Society of Municipal Improvements. The Contractor, November 1, 20 cts.

**Gravel Roads—Construction and Maintenance.** Abs. By S. P. Hooker, state superintendent of highways, New Hampshire. Third American Road Congress. 1 p., Engineering Record, November 22, 10 cts.

**Bituminous Roads and Streets.** Principles governing design and operation of construction equipment for bituminous pavements. 1½ pp., Engineering & Contracting, November 12, 10 cts.

**Sludge Asphaltum from the Treatment of Crude Mineral Oils.** By F. C. Thiele. 1¼ pp., Chemical Engineer, November, 25 cts.

**Value of the Fixed Carbon Test.** Amount of carbon in asphalt. By H. B. Pullar. 2 pp., Canadian Engineer, November 13, 15 cts.

**Concrete Roads.** Showing defects of sections on Wayne County concrete roads. By F. F. Rogers, state highway commissioner of Michigan. American Road Congress. 3 pp., Good Roads, November 1, 10 cts.

**Concrete Roads in Wayne County.** By A. M. Johnson, state highway engineer. 2 pp., Concrete-Cement Age, November, 15 cts.

**Concrete Roads.** Present conditions of Wayne County road; their construction and maintenance. By Frank F. Rogers, state highway commissioner of Michigan. 2½ pp., Municipal Journal, December 4, 10 cts.

**Maintenance of Wayne County Roads.** Report of Board of County Road Commissioners of Wayne County, Mich. 1¼ pp., Concrete-Cement Age, November, 15 cts.

**Roads and Streets.** Methods and cost of constructing a concrete road near Mason City, Ia. Ill., 1½ pp., Engineering Contracting, November 26, 10 cts.

**Concrete Roads.** Abs. By A. N. Johnson, state highway engineer of Illinois. 1½ pp., Cement Era, November, 10 cts.

**Cost of Concrete Paving.** ¼ p., Municipal Journal, December 4, 10 cts.

**Concrete at the Road Congress.** Concrete roads. By Frank F. Rogers, state highway commissioner of Michigan. American Road Congress. 2 pp., Cement Era, November, 10 cts.

**Reinforced Concrete Paving at Port Huron, Mich.** Details of construction and cost. By E. R. Whitmore, city engineer. Ill., 4 pp., Cement and Engineering News, November, 10 cts.

**Glossary of Road Terms.** II. By H. P. Boulnois. M. I. C. E., F. S. I., member Advisory Committee of H. M. Road Board. 4 pp., Surveyor, October 31, 15 cts.

**Glossary of Road Terms.** Part 3. By H. P. Boulnois. 2 pp., Surveyor, November 7, 2½ pp., November 14, 15 cts.

**Glossary of Terms Used in Road Construction.** By H. P. Boulnois. M. I. C. E. 3 pp., Contract Record, November 12, 15 cts.

**Equipment.** The Protection and Up-keep of Road. By D. J. Hauer, American Road Congress. 1¼ pp., Concrete-Cement Age, November, 15 cts.

**Organization.** Highway Department. Ed., ¼ p., Municipal Journal, December 4, 10 cts.

**New York Highway Organization.** Adopted scheme for reorganization. 1¼ pp., Municipal Journal, December 4, 10 cts.

**New York State Road Organization.** Details of complete reorganization; history of road movement in New York; determination of specifications and types;

maintenance and bridges. Abs. Rep. Board of Consulting Engineers. 3 pp., Engineering News, November 13, 15 cts.

**Pennsylvania State Highway.** Organization of department; relaying of asphaltic concrete surface; reconstruction problems. Ill., 4 pp., Municipal Journal, December 4, 10 cts.

**Aid.** More Agitation for Federal, to Highway Construction. Ed. ½ p., Engineering News, November 13, 15 cts.

**The Pennsylvania Vote on a \$50,000,000 Bond Issue for Good Roads.** Ed. ¾ p., Engineering News, November 13, 15 cts.

**More Than \$6,000,000 for Highways.** Improved roads near Bristol, Va.-Tenn. Ill., 1½ pp., Manufacturers' Record, November 6, 15 cts.

**Repaving Fifth Avenue.** Ill., 2½ pp., Municipal Journal, November 20, 10 cts.

**Brick Laid Flatwise or with the Fibre in a Vertical Position.** Pavement Construction With. By J. T. Tucker, director School of Civil Engineering, University of Oklahoma. Ill., 1½ pp., Engineering & Contracting, November 19, 10 cts.

**Asphalt Paving in Baltimore, Md.** Laying the Base for. A critical study of the methods used with suggested improvements. By D. J. Hauer. 2½ pp., Contractor, November 15, 20 cts.

**Creosoting Plant.** A Vertical Tank Paving Block. Ill., 1½ pp., Engineering and Contracting, November 26, 10 cts.

**Sidewalks.** Control of. Inspection by municipal officials; discussion of municipal construction and maintenance. 1½ pp., Municipal Journal, November 20, 10 cts.

## SEWERAGE AND SANITATION.

**Sewerage Scheme.** Greater Vancouver. Organizing and financing project for draining 55,600 acres, with data on rainfall and float tests of dispersion of outfalls. Ill., 3 pp., Contract Record, November 12, 15 cts.

**The Need for Standardization in Drainage Details.** By A. Palmer, Institution of Municipal Engineers. Ill., 1 p., Contract Journal, November 12, 15 cts.; 3½ pp., Surveyor, November 14, 15 cts.

**Construction.** Subaqueous Sewer, Brooklyn, N. Y. Details of sewer system constructed in fine running sand; plans and illustrations. 6¼ pp., Engineering News, November 27, 15 cts.

**Pumping Machinery and Appliances.** Sewage. Types of sewage pumping apparatus. Pneumatic ejectors, centrifugal and plunger pumps; automatic sewage lifts. Ill., 1½ pp., Canadian Engineer, November 13, 15 cts.

**Disposal Plant Costs.** Description of sewage disposal plant at Pennsylvania State College; classified amounts of material and labor used. By C. A. Bingham, Asso. Mem. A. S. C. E. Ill., 2½ pp., Municipal Journal, November 20, 10 cts.

**Sewerage.** The separation of grease and sewage sludge with special reference to plants and methods employed at Bradford and Oldham, England. By K. Allen. Metropolitan Sewerage Commission of New York City. Plan. 1½ pp., Engineering and Contracting, November 26, 10 cts.

**Preparatory Treatment of Sewage—Observations and Experiments.** Abstract of paper by C. G. Hyde, Professor of Sanitary Engineering, University of California. 3½ pp., Canadian Engineer, November 27, 10 cts.

**Sewage Disposal—How to Build a Plant for the Country Home.** By B. Brooks. Ill., 2½ pp., Brick & Clay Record, November 18, 20 cts.

**Important Factors in the Design of Sewerage Systems.** Disposal; grit removal. By J. H. Gregory, American Society of Municipal Improvements. 2 pp., Canadian Engineer, November 6, 15 cts.

**Recent Observations and Experiments Upon the Preparatory Treatment of Sewage.** Composition of sewage; necessities

of treatment; sedimentation and sludge digestion; the odor problem; Imhoff tanks. By C. G. Hyde. 6½ pp., Pacific Municipalities, November, 25 cts.

**Public Health.** The Citizen and the. By John W. Trask, assistant surgeon general, U. S. Public Health Service. 6¼ pp., Public Health Reports, November 7.

**The Municipal Engineer and Public Health.** General considerations. By J. Antonisen, superintendent Brandon Municipal Railway. Public Health Congress, Regina, Canada. 2 pp., Canadian Engineer, November 6, 15 cts.

**Expenses of Boards of Health.** By J. E. Bauman, assistant secretary, Ohio State Board of Health. 11 pp., Bulletin, November.

**Sanitary Surveys of Rivers.** By J. R. Malek, assistant provincial sanitary engineer, Regina. Congress of the Canadian Public Health Association. 2 pp., Canadian Engineer, November 13, 15 cts.

**Methods and Results of Medical School Inspection in a Cosmopolitan District of 12,000 Inhabitants.** By E. R. Hayhurst, A. M., M. D., chief of Survey of Occupational Diseases, Ohio State Board of Health. 10 pp., Bulletin, November.

## WATER SUPPLY

**Water Supply of Tiverton.** Description of plan and sections of the service reservoir at Warricombe; analyses of water; plans and illustrations. Paper before Municipal and County Engineers. By V. Siddalls, borough surveyor of Tiverton. 2 pp., Water and Water Engineering, November 15, 20 cts.

**Dual Water-Supplies and Typhoid Fever at Philadelphia.** Abs. By Dr J. S. Neff, director of Department of Public Health and Charities, American Public Health Association. 1¼ pp., Engineering News, November 20, 15 cts.

**Dam.** Building the Arrowrock. Ill., 2½ pp., The Contractor, November 15, 20 cts.

**Construction of the Somerset Dam.** Mass. Ill., 4 pp., The Excavating Engineer, November, 10 cts.

**Advantages of the Rolling Dam.** Ed. ¼ p., Engineering Record, November 22, 10 cts.

**Reservoir.** Design of Muskogee Concrete. Abs. By A. Potter, American Water Works Assn. Ill., 2½ pp., Engineering Record, November 29, 10 cts.

**Storage to be Provided in Impounding Reservoirs for Municipal Water Supplies.** Curves and tables. By Allen Hazen. Am. Soc. C. E. 100 pp., Proceedings, November, \$1.

**Collapse of a Thin Partition Wall in a Water-Works Settling Basin.** Ill., ½ p., Engineering News, November 25, 15 cts.

**Laying Submerged Water Main on Pile Supports at Richmond.** B. C. ½ p., Contract Record, November 26, 10 cts.

**Method and Cost of Removing and Relaying a ten-inch flexible joint cast-iron water main crossing Neponset river near Boston.** By E. M. Blake, engineer of field operations. Ill., 1¼ pp., Engineering and Contracting, November 5, 10 cts.

**Laying Toronto's Second Intake Pipe.** Placing 2,400 feet of 6-foot pipe on the bed of Lake Ontario and concreting it into place; speed of construction. Ill., 4¼ pp., Canadian Engineer, November 27, 10 cts.

**Corrosion of Water Mains.** Some Notes on the. Paper before Municipal and County Engineers. By William Ransom, Asso. M. I. C. E., asst. engineer. 1½ pp., Surveyor, November 21, 15 cts.

**Electrolysis Not Guilty.** Consideration of case of corrosion of service pipes. By W. L. Puffer. Ill., ¾ pp., Municipal Journal, November 27, 10 cts.

**Unusual Features of a 48-Inch Cast-Iron Water Main Across a Salt Marsh to Atlantic City.** N. J. By T. C. Hutton. Ill., 3 pp., Engineering News, November 20, 15 cts.



**Pipes, Stresses in Circular.** Design of large water conduits; calculation of stresses due to internal water pressure; weight of shell and backfill. By T. H. Hodge, M. A. Sc., A. M. Canadian Soc. C. E., assistant hydraulic engineer, Hydroelectric Power Commission of Ontario. Ill., 6 pp., Canadian Engineer, November 13. 15 cts.

**Pumps, St. Louis Centrifugal.** Abs. By Leonard A. Day, chief mechanical engineer, St. Louis Water Department. Engineer's Club, St. Louis. Ill., 1½ pp., Municipal Journal, November 20. 10 cts.

**Filter Specifications.** Toronto. 3 pp., Canadian Engineer, November 27. 10 cts.

**Water Works.** Methods and cost of maintaining and operating the new slow sand water filtration plant at Toronto, Ont. Diagrams and tables. 5½ pp., Engineering and Contracting, November 26. 10 cts.

**Evanston Filter Plant.** The construction of 12,000,000-gallon rapid filter plant with ridge-block underdrainage system, to purify water from Lake Michigan. Ill., 2 pp., Engineering Record, November 22. 10 cts.

**Tuning Up Filters at Albany, Oregon.** Installing a three-million-gallon rapid filter plant; details of conditions; operation and adjustments. 1½ pp., Engineering Record, November 15. 10 cts.

**Failure of Groined Arches at Baltimore's New Water Filtration Plant.** Collapse caused by premature loading of concrete arches with earth fill. By J. W. Armstrong, engineer filtration division, City Water Department. Ill., 2 pp., Engineering Record, November 15. 10 cts.

**Frost Damages to Montreal Filters.** Cracking and Spoiling of Piers, floors and arches during winter; repair methods. By F. E. Field, resident engineer, filtration works, Montreal. Ill., 3½ pp., Engineering Record, November 22. 10 cts.

**Putting the Small Filter Plant into Operation.** Ed. ½ p., Engineering Record, November 22. 10 cts.

**Methods and Labor Cost of Constructing the 39,000,000-gallon mechanical water filtration plant at Minneapolis, Minn.** By W. N. Jones, A. M. A. S. C. E., engineer in charge of construction. Ill., 8½ pp., Engineering and Contracting, November 5. 10 cts.

**Design, Construction and General Cost of the New Slow Sand Water Filtration Plant at Toronto, Ont.** Detailed description of conditions; masonry and concrete work; pumping station and laboratory; analysis of costs. Abs. By F. F. Longley, Canadian Society of Civil Engineers. Ill., 5½ pp., Engineering & Contracting, November 19. 10 cts.

**Decolorization of Water by the Excess-Coagulation Method at Springfield, Mass.** Overdosing with aluminum sulphate; curve comparisons of raw and filtered waters. By E. E. Lockridge, engineer of Water Department. Ill., 2 pp., Engineering News, November 13. 15 cts.

**Sterilization of Water, The Rationale and Advantages of Lime.** By C. P. Hoover, chemist in charge of water purification works, Columbus, O. 2 pp., Contract Record, November 26. 10 cts.

**Autos in Water Department.** Operating costs and efficiency secured. 1½ pp., Municipal Journal, November 27. 10 cts.

## STREET LIGHTING AND POWER PLANTS

**Street Lighting in Wilkinsburg, Pa.** Details of installation and distribution curves. Flame carbon arc lamps and tungstens. Ill., 3 pp., Lighting Journal, November. 10 cts.

**Parkway Lighting.** Ornamental luminous arc lamps; electrical details of installation. 2 pp., Lighting Journal, November. 10 cts.

**Gas Rates.** By A. S. Miller. Paper before American Gas Institute. 1 p., The Gas Age, December 1. 10 cts.

**The Economic Importance of Pre-Payment Gas Meters.** Rep. Jour. f. Gasbeleuchtung. By K. Borchardt. 1 p., Water and Gas Review, November. 20 cts.

**The Behavior of Water in Holder Cups and Tanks.** Details of action of water in gas tanks. Abs. By H. W. Alrich. American Gas Institute. Ill., 4½ pp., American Gas Light Journal, November 17. 10 cts.

**Organization and Equipment for and Method of Handling Street Leaks.** Details of emergency repairs in Chicago. New York City and Philadelphia. By A. D. Whitaker. American Gas Institute. Ill., 5½ pp., American Gas Light Journal, November 10. 10 cts.

**Electric Lighting.** Incidental Improvements in. ¾ p., Electrical Review, November 29. 10 cts.

**Hydroelectric Development on the Tennessee River.** Completion of nine years of work; difficulties; description of generating equipment; dam and transmission line. Ill., 4 pp., Electric World, November 15. 10 cts.

**Hydroelectric Station on the Auglaize River.** Features of the generating and switching equipment. Ill., 4 pp., Electrical World, November 1. 10 cts.

**South Yuba-Bear River Power Development.** Description of plants in one valley in California and progress made on the first to operate under 1,375 foot head. By J. P. Jollyman. 1½ pp., Engineering Record, November 22. 10 cts.

**The Development of Water Power.** Ed. 1 p., Electric Review, November 29. 10 cts.

**New Turbine Installation at Little Rock, Ark.** Ill., 4½ pp., Electrical World, November 29. 10 cts.

**Oil Burning Furnaces.** Principles of operation. By R. T. Strohm. Ill., 2 pp., Electrical World, November 15. 10 cts.

**Distribution.** Recent Structural Progress in Power. Ed. ½ p., Engineering Record, November 15. 10 cts.

## FIRE DEPARTMENT

**Organization of Portland Fire Department.** Fire hazard in congested district; building inspections. 1½ pp., Fireman's Herald, November 15. 5 cts.

**Fire Chief, How Old Should He Be?** Ed. ½ p., Fire & Water Engineering, November 26. 10 cts.

**Fire Prevention Movement.** View of activity in general. 1½ pp., Fireman's Herald, November 22. 5 cts.

**Building Statistics for 1912.** Erection of fire-resisting structures. 2 pp., Fireman's Herald, November 29. 5 cts.

**Fire Prevention Methods.** 1 p., Fire & Water Engineering, November 5. 10 cts.

**Building Inspection by Firemen.** Ed. ½ p., Fireman's Herald, November 22. 5 cts.

**Extinguishing of Fires in Oils and Volatile Liquids.** By E. A. Barrier. Paper before American Society of Mechanical Engineers, New York. 1 p., Fire & Water Engineering, November 19. 10 cts.; 1½ pp., Canadian Engineer, November 20. 10 cts.

**Chemicals as Fire Extinguishers.** Ed. ¼ p., Fire & Water Engineering, November 19. 10 cts.

**The Russian Fire Service.** Ill., 3 pp., Fireman's Herald, November 8. 5 cts.

**Motor Driven Fire Apparatus—Its construction, operation and care.** Part 2. Ill., 2 pp., Fire & Water Engineering, November 5. 10 cts. Part 3. Ill., 2½ pp., Fire & Water Engineering, November 26. 10 cts.

**British Motor Fire Cars and Their Operation.** By Frank C. Perkins. Ill., 2 pp., Fire and Water Engineering, November 5. 10 cts.

## GOVERNMENT AND FINANCE

**Administration in Canada.** Recent Developments in Municipal. By T. A. Hunt. League of American Municipalities. 3 pp., Western Municipal News, November. 10 cts.

**Engineers for the New York Public Service Commissions and as Heads of the New York City Departments.** Relations between commission and city. 1½ pp., Engineering News, November 20. 15 cts.

**Amateur Municipal Doctoring.** Need of correct diagnosis and solution of municipal problems. Ed. ¼ p., Municipal Journal, November 27. 10 cts.

**Preparing for Next Year's Work.** Suggestions of expense-saving methods in highway work. Ed. ¼ p., Municipal Journal, December 4. 10 cts.

**Public Utility Properties.** Depreciation of, as Affecting Their Valuation and Fair Return. By J. W. Alvord. M. Am. Soc. C. E., 23 pp., Proceedings, November. \$1.

**A Municipal Electric Railway.** St. Louis Water Works Railway. By A. L. Bostwick. Ill., 2½ pp., Municipal Journal, November 27. 10 cts.

**Municipal Trading in Germany.** Ed. ¾ p., Contract Journal, November 12. 15 cts.

**Bond Issues for Road Improvement.** By S. E. Bradt, secretary Illinois Highway Department. 1½ pp., Manufacturers' Record, December 4. 15 cts.

**The Method of Issuing Municipal Securities.** By E. M. Wood, deputy municipal commissioner, Manitoba. 1 p., Western Municipal News, November. 10 cts.

## TRAFFIC & TRANSPORTATION

**Vehicle Sizes.** Regulating. Ed. ¼ p., Municipal Journal, November 20. 10 cts.

**Motor Omnibus Operation.** Report of Bureau of Franchises of the Board of Estimate of New York City. Studies of

operation in London and Paris. By H. P. Nichols and J. A. McCollum. 3 pp., Engineering News, November 20. 15 cts.

**The Future of the Motor Omnibus.** Ed. 2 pp., Engineering News, November 20. 15 cts.

**The Improvement of Street Car Illumination.** Ed. ¾ p., Electrical Review, November 22. 10 cts.

**Hydro-electric Railway, A Proposed Municipal, for Toronto and North Eastern District.** 2½ pp., Canadian Engineer, November 27. 10 cts.

**Standardization of Street Railway Special Work.** Details of track laying. By A. E. Harvey, chief engineer, Metropolitan Street Railway Company, Kansas City, Mo. Ill., 6 pp., Canadian Engineer, November 6. 15 cts.

**Subway, Overcoming Difficulties in New York.** Conditions, operations, excavation and girder system, and method of rock handling. Ill., 2½ pp., Engineering Record, November 22. 10 cts.

## MISCELLANEOUS

**Cement, A Bonus System for the Purchase of Portland.** By W. C. Reibling. 6 pp., Cement, October. 25 cts.

**Olympic Cement Plant, Bellingham, Wash.** Description of only wet process installation in the U. S., using hard material. By C. M. Lewis, B. S. Ill., 5½ pp., Pacific Builder & Engineer, November 29. 15 cts.

**Gravel and Stone—Qualities, Tests and Selections.** By A. T. Goldbeck. American Road Congress. 5½ pp., Cement and Engineering News, November. 10 cts.

**Bridges and Culverts, Concrete.** Design of concrete arch bridges. Ill., 3 pp., The Cement Era, November. 10 cts.

**A Concrete Viaduct in the Northwest.** Ill., 1½ pp., Concrete-Cement Age, November. 15 cts.

**Contracts, Some General Principles Applicable to Public Construction.** Report of committee, American Society of Engineering Contractors. ½ p., Engineering News, November 20. 15 cts.

**Legal Hints for General Contractors.** By T. H. Ray, New York City Bar. 2½ pp., Bulletin, November. 10 cts.

**Estimating, Scientific Principles of.** By F. Trissington. 1½ pp., Contract Record, November 19. 10 cts.

**Unloading Broken Stone or Gravel from Cars by Scraper.** By R. Bennett. Ill., ¼ p., Engineering News, November 20. 15 cts.

**Motor Trucks, Adaptability and Economy of, in Hauling Garbage and Street Repair Materials in Chicago.** With curves. 2 pp., Engineering & Contracting, November 26. 10 cts.

**Street Cleaning in Chicago.** Abs. Results of constructive investigation of cleaning and repairing streets and the collection of garbage and waste. Report Civil Service Commission. 1½ pp., Engineering Record, November 15. 10 cts.

**Flood Protection Plans for Ohio Cities.** Abstract of report. By J. W. Hill. 1 p., Engineering Record, November 20. 10 cts.

**City Building to Order.** Construction work for the industrial city of Kincaid. Ill., 1 p., Engineering and Contracting, November 5. 10 cts.

**Transforming Southwest Texas.** Part played by power machinery; developing the Corpus Christi Brownsville region. By A. Phenix. 1½ pp., Manufacturers' Record, December 4. 15 cts.

**Housing at Taunton, England.** Municipal. Ill., 1½ pp., Surveyor, November 7. 15 cts.

**Recreation Experiments in a Small Conservative New England Town.** By Rev. R. C. Clapp. 2½ pp., The Playground, December. 25 cts.

**Playground Equipment.** By H. S. Curtis, Ph.D. 28 pp., The Playground, November. 25 cts.

**Village Recreation in Lebanon, Ohio.** By H. C. Britton, director of Civic Trust of Lebanon. 5 pp., The Playground, December. 25 cts.

**Survey of Children's Garden in Boston.** By Thomas Curley. Massachusetts Civic League. 5 pp., The Playground, December. 25 cts.

**Smoke Abatement in Pittsburgh.** By E. Brown. Ill., 2 pp., Steam, November. 25 cts.

**Notes on the Standard Apparatus and Method for Measuring the Amount and Character of Atmospheric Pollution.** By J. B. C. Kershaw. Ill., 2 pp., Surveyor, October 31. 15 cts.

**Moving Pictures, Municipal Use of.** Suggestion of possible uses. Ed. ¼ p., Municipal Journal, November 27. 10 cts.

**Reports, Desirability of Publishing the Results of Departmental Researches in Appendices to City Engineering.** Ed. ½ p., Engineering & Contracting, November 5. 10 cts.

## NEWS OF THE SOCIETIES

### Calendar of Meetings.

December 8-11.

ASSOCIATION OF AMERICAN PORTLAND CEMENT MANUFACTURERS.—Annual meeting, New York City. Percy H. Wilson, Secretary, Land Title Building, Philadelphia, Pa.

December 9-12.

AMERICAN ROAD BUILDERS' ASSOCIATION.—Annual Convention, First Regiment Armory, Philadelphia, Pa. E. L. Powers, Secretary, 150 Nassau street, New York City.

December 10-13.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS.—Annual meeting, New York. J. C. Olsen, Secretary, Polytechnic Institute, Brooklyn, N. Y.

December 20-31.

THE ARKANSAS ASSOCIATION OF SURVEYORS AND CIVIL ENGINEERS.—Fifth annual meeting, Hotel Marion, Little Rock. J. O. Jones, Secretary, Birta, Ark.

January 10.

MUNICIPAL ENGINEERS OF THE CITY OF NEW YORK.—Eleventh Annual Dinner, Hotel Savoy. George A. Taber, Secretary, 29 West 39th St.

January 16.

AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—Annual meeting, New York City. J. R. Wemlinger, Secretary, 11 Broadway, New York City.

February 12-14.

NATIONAL CONFERENCE ON CONCRETE ROAD BUILDING.—Auditorium Hotel, Chicago, Ill. J. P. Beck, Secretary, 72 West Adams St., Chicago, Ill.

February 16-20.

NATIONAL ASSOCIATION OF CEMENT USERS.—Fourth Annual Convention, Chicago, Ill. Edward E. Krauss, Secretary, Harrison Building, Philadelphia, Pa.

### New York State Sanitary Officers' Association.

The fourth annual meeting was held at Hotel Utica, Utica, November 19-22. The following officers were elected: President, Dr. Otto Pfaff, Oneida; vice-presidents, Dr. G. Scott Towne, Saratoga; Dr. J. S. Walton, Amsterdam; Dr. J. S. Wilson, Poughkeepsie; Dr. C. R. Mahady, Rome; secretary, Dr. A. B. Santry, Little Falls; treasurer, Dr. George F. Mills, Oneida.

The big ballroom was so crowded that many had to stand when Commissioner Porter called the conference to order for the afternoon session. In his opening address Commissioner Porter sounded a note that was echoed by several succeeding speakers when he emphasized the necessity for education of the public to the great work being done for the prevention of disease and the upbuilding of public health. Education seems to be the one essential for the success of this movement, and every means of getting the matter before the public is being employed. Arguing that prevention of disease is as essential and reasonable as prevention of accidents, Commissioner Porter said: "No health department alone can cope with the public health problem. Health or illness depends upon the people. A community is lawless or orderly according to the wish of its people—not the wish of its police. The police can control a small minority—a lawless element; they cannot control majorities. Public health or illness depends upon the people. A health department can do as much as

the people want it to do and no more. Also, public desire must be positive, not negative. It must evidence itself in expression and in co-operation—primarily in co-operation. A good department may suggest health regulation; it may try out rules and regulations; it may lead the way and try to show that the way it takes leads to health. But thereafter it must have followers, who see merit in its efforts and who will back it up. In other words, it must have co-operation. The health department is a department created and supported by the people to look after the community's health, to protect them and their neighbors from unnecessary exposure to sickness." Saying it is the people's servant, the speaker showed that the department represents the desire of the people "to avoid disease, to live useful, wholesome lives, to protect themselves, their children and their families.

\*\*\* It represents one of the finest products of our civilization, the realization that health is the right of every man and that the preservation of one's own health and that of his neighbor is a moral duty." After saying that one duty is the enforcement of law, Commissioner Porter said: "But of more importance than the enactment of laws or the promulgation of regulations is their enforcement. It is not the laws on the statute books that are of value, but the ones that are enforced." The commissioner emphasized the point that the health department must have the co-operation of the state government in all its departments; of city, county and village authorities; of education authorities; of all judicial officers; of ministers and churches; of organizations, labor unions, granges, social clubs, and the like. The general education work to utilize all methods of spreading the public health propaganda was discussed, as one of the most important tasks before the department and its representatives.

The first paper was by Secretary Alex. H. Seymour, of the State Department of Health, who discussed "The Public Health Law and the Sanitary Code." This was a somewhat technical discussion of the provisions of the law, being intended to instruct the health officers as to their duties and powers under the law, and, judging from the close attention given Secretary Seymour, it was most instructive. A very general discussion followed, this being opened by Dr. J. S. Wilson, of Poughkeepsie. He urged the necessity for more care in the appointment of sanitary supervisors and suggested a change in the law so that any person, instead of a physician, might make a complaint to a health officer regarding dangerous cases of tuberculosis.

Dr. Henry L. K. Shaw, of Albany, spoke upon the topic, "Give the Baby a Square Deal." Stereopticon pictures and charts assisted materially in mak-

ing statistics of infant mortality impressive. It was said that New Zealand had the lowest rate of mortality among the babies, there being only 62 deaths out of every 1,000. Chili and Russia have the highest rate with nearly 400. Dr. Shaw said that Utica has high infant mortality, about 15 per cent of babies die before reaching their first year. Ignorance and poverty were considered the fundamental causes of the deaths. That the per capita in providing for the health of inhabitants of Albany and Utica was the lowest of any was the statement of Dr. Shaw. It was said that there was a big decrease in the death rate since New York City established agencies of health. Charts told how money can lower the death rate among infants. Milk was discussed as a vital question. Pictures of unsanitary farms were shown, and an explanation of the diseases among babies was traced. Quoting statistics taken from this city between Jan. 1, 1913, and Oct. 1, 1913, it was stated that 259 babies died in Utica under 12 months of age. Fully 100 of these, said Dr. Shaw, should have been saved. He praised the work of Utica's pure milk station, and also the enthusiasm shown by Dr. Clark. "Utica has set a wonderful example," he said, "for it was one of the first cities to utilize schools for milk stations."

Commissioner Porter outlined a plan by which the "right to health" could be secured as follows:

"Now the method by which such rights can be secured is neither difficult nor obscure. The steps are simple and are applicable by the average layman or the village physician to the smallest village or rural community. They would stand something as follows: The notification of every case when it is first recognized; the registration in central office of facts as to each dangerous thing or person; the examination of the seat of danger, to discover its extent, its cause, and new seats of danger created by it; the isolation of the dangerous thing or person; constant attention to prevent extension to other persons or things; destruction or removal of disease germs or other causes of danger; analysis and record for future use of lessons learned by experience; education of the public to understand its relation to danger, checked or removed, responsibility for preventing recurrence of the same danger, and importance of promptly recognizing and checking similar danger elsewhere." Commissioner Porter closed his paper with an analysis of these provisions and an appeal for united effort in the advancement of public health as a great aid to "the distribution of human happiness."

Dr. John N. Hurty, for many years commissioner of health of Indiana, discussed the proposition, "Is Public Hygiene Possible Without More Co-operation of Business Men?" Dr. Hurty's answer was an emphatic negative. The success of the movement, he argued, depends on public opinion,



which, particularly in cities, acquires power most rapidly when supported by business and professional men. Hence it is necessary that those interested in the problem should be more definite in their proposals, so that they may have specific aims toward the accomplishment of which they may enlist the aid of business men. Then, Dr. Hurty said, they will utilize their executive ability to make progress with as much success as in their business enterprises. It seemed to Dr. Hurty that, after all, the best way of interesting business men in securing better public health conditions is by showing them the saving in dollars. The present system wastes money by dealing with effects rather than causes, and the need for relief is increasing more rapidly than the agencies available for such purposes. More than \$7,000,000 goes for the support of institutions in Indiana, this amounting to a tax of \$100 a year for every man in the state. "When the business men come to realize this, their business sagacity will cause them to go to the root of the trouble and stop such wastes." Saying that \$1 spent for prevention would save \$100 spent for punishment, Dr. Hurty spoke of one pair of defectives in Indiana from whom there have been 67 descendants that cost the state \$700 a year.

Dr. Mark W. Richardson, secretary of the Massachusetts Board of Health, had the first paper on "The Educational Work of the Health Officer." As a means for carrying on the health propaganda he mentioned clubs, newspapers and any agents for spreading information or interesting people in the work. There was a very general discussion, in which many officers took part.

Dr. C. F. McCarthy, Batavia's health officer, spoke on the topic, "How to Use and Correlate Lay Agencies in the Public Health Service." Without boasting, Dr. McCarthy told how improvements had been brought about in Batavia by using the means at hand, and he proved such an inspiring talker that he was asked to continue leading the discussion after his time was up.

"The Health Officer and Vital Statistics" was the subject taken by Dr. Wilmer R. Batt, of Harrisburg, Pa. He called attention to the growing tendency of governmental functions along social service lines and said that the accurate registration of vital statistics is a very important and fundamental social service. The necessity for care in filling out the various blanks provided by the state department was called to the attention of the health officers, and he urged them to always report the occupation on death blanks, as the relation of various lines of work to the length of life is being widely investigated.

Theodore Horton, chief engineer of the State Department of Health, spoke on "How to Make a Sanitary Survey." Mr. Horton said that it is most important that a sanitary officer have full knowledge of the sanitary conditions in his community, and continued:

"Now the subjects to be covered by

the sanitary survey should so far as possible include every field of activity of the health officer. His duties seem to be almost limitless, and one may classify them under many divisions. For the purpose of the sanitary survey, however, and with due consideration of the time and facilities available to the health officer and the requirements of the new law, I prefer to divide the work of the survey under the following headings:

1. Communicable diseases.
2. Sewage disposal.
3. Water supply.
4. Garbage disposal.
5. Nuisances.
6. Sanitation of public buildings.
7. Dairies and milk inspection."

In a manner that proved very instructive because it was done in practical fashion, Mr. Horton explained in detail what could be done under each of these subdivisions. The keynote of his paper was the necessity for system in devising records that will give a graphic representation of conditions and still possess the permanence and accuracy to be of value in studying the health conditions of a community.

#### The Arkansas Association of Surveyors and Civil Engineers.

The fifth annual meeting of the association will be held in Little Rock, at Hotel Marion, December 30-31. The officers of the society are as follows: W. H. Newsome, C. E., Pres. and Chairman Executive Committee, Wynne; F. O. Cook, C. E., Vice-President, Agent; J. O. Jones, Surveyor, Secretary-Treasurer, Birta; Honorary President, Hon. Reuben G. Dye, State Land Commissioner, Little Rock, Ark.; Honorary Vice-President, W. B. Owens, Deputy State Land Commissioner, Little Rock, Ark.; Executive Committee: L. P. Arnold, C. E., Lonoke, Ark.; M. A. Bennett, C. E., Warrenton, Ark.

## PERSONALS

Dickerman, Judson G., recently chief gas tester of the city of Chicago, has been appointed chief of the Bureau of Gas, of Philadelphia, succeeding Dr. Hollis Godfrey.

Nolen, R. G., Lebanon, Tenn., has been appointed chief of police.

Johnson, George A., consulting engineer, of New York, has been engaged as engineer on the sewage disposal project for Middletown, N. Y.

Johnson & Fuller, consulting engineers of New York, have been engaged to investigate and report upon improved water supply projects for Wheeling, W. Va.

Truitt, W. S., Darlington, S. C., has been elected chief of the fire department, succeeding T. F. James.

The following officials have recently been elected or appointed:

Baltimore, Md.—The following are the newly-elected commissioners of Baltimore county: James Rittenhouse, George Yellott and William F. Coghlan.

Wilkes-Barre, Pa.—Mayor Kosek has appointed Frank Hochreiter chief of the fire department, succeeding Jos. Schuler.

Westfield, N. Y.—Mayor Evans has appointed the following members of the Town Plan and Art Commission: George E. Hayes and W. H. Orr, A. L. Alpers and George Cox, and A. D. Tuttle and A. N. Pierson. Geo. Miller was delegated by Council to attend the Good Roads Convention, Philadelphia.

Holyoke, Mass.—City clerk, John F. Sheehan.

Portland, Me.—Mayor, Oakley C. Curtis.

Albany, Ga.—Mayor, H. A. Tarver. South Jacksonville, Fla.—Mayor, John F. White.

Troutdale, Ore.—Mayor, Mrs. Clara Larson.

Lafayette, Ga.—Mayor, D. W. Herndon.

## CONNECTICUT.

Willimantic—Mayor, Daniel P. Dunn, re-elected.

Rockville—Mayor, S. Tracy Noble.

Bridgeport—Mayor Clifford B. Wilson has announced the following appointments to take effect January 1: Fire chief, A. H. Canfield; public works, Jacob A. Coutarde, reappointed; city engineer, Alfred H. Terry, reappointed.

## MASSACHUSETTS.

Brockton—Mayor, Charles M. Hickey.

Waltham — Mayor, Thomas F. Kearns.

Quincy—Mayor, John L. Miller.

Marlborough—Mayor, Thomas H. O'Halloran.

New Bedford—Mayor, Charles S. Ashley, for seventeenth term.

Gloucester—Harry C. Foster.

Northampton—W. H. Felker.

Pittsfield—Patrick J. Moore.

Fitchburg—Benjamin A. Cook.

## OREGON.

Heppner—Mayor, W. W. Smead.

Newport—Mayor, J. W. Kelly.

Albany—Mayor, S. M. Curl.

Amity—Mayor, J. W. Briedwell.

Pendleton—Mayor, W. F. Mallock.

Sweet Home—Mayor, Henry Meyers.

Cottage Grove—Mayor, J. H. Chambers.

Union—Mayor, C. E. Davis, street commissioner, J. W. Ferguson.

Scio—Mayor, M. A. Ewing.

Junction City—Mayor, Forrest Miller.

Molalla—Mayor, A. T. Shoemaker.

Tillamook—Water Commissioner, J. C. Holden.

Independence — Mayor, K. C. Eldridge.

Sheridan—Mayor, Ernest Dilley.

Grant's Pass—Mayor, E. T. McKinstry.

Willamina — Mayor, Dr. Andrew Cushan.

Stayton—Mayor, Dr. H. A. Beauchamp.

Lafayette—Mayor, D. E. Howard.

# NEW APPLIANCES

## MOTOR STREET CLEANER.

### A Strictly Municipal Automobile Adapted to a Variety of Street Uses.

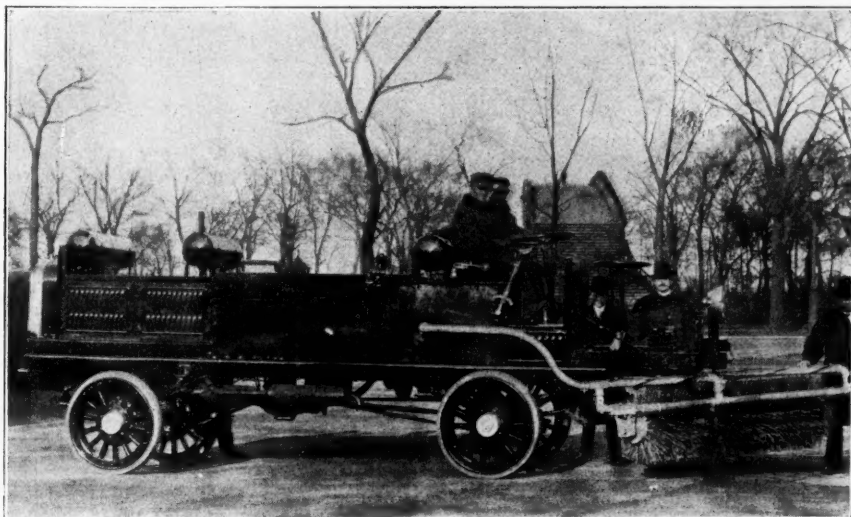
Objection is often made to the purchase of large motor trucks on the

The car is designed for heavy work and, as a five-ton truck, carries a body with a loading space of 12 by 6 feet. For sweeping snow a large broom is attached to the front of the car. It is driven by the same motor that pro-

raising it from the driver's seat in front. The driving mechanism of the sweeper is built in one housing and driven by a silent chain and gears running constantly in oil and grease. As a flushing machine or sprinkler a large water tank is placed on the car with a pressure pump driven by the motor engaged by a clutch, which forces the water at great pressure out of the different nozzles.

The specifications follow:

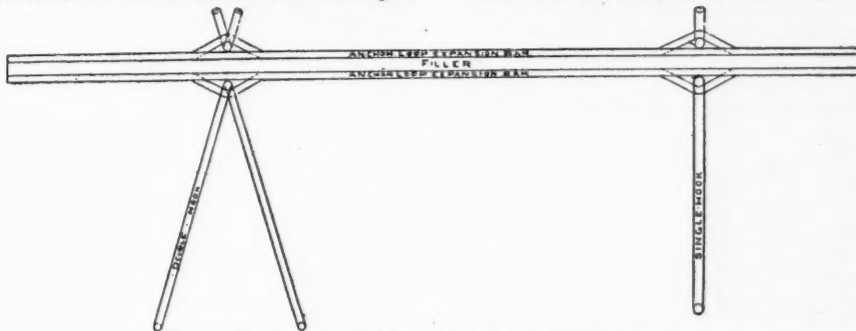
Motor—4 cylinder 5 1/4 x 7".  
Speed—8 to 10 miles per hour.  
Wheel base—148".  
Tread—68".  
Capacity—5 ton.  
Steering—Irreversible.  
Ignition—Bosch High Tension Water-proof magneto.  
Carburetor—Stromberg heavy duty truck type.  
Clutch—Hele-Shaw multiple disc.  
Speeds—Three forward—one reverse.  
Drive—Four Wheel Drive—Power on all four wheels. Locking device on center differential.  
Frame—6" channel pressed nickel steel—heat treated.  
Springs—Semi elliptic front and rear.  
Tires—38 x 5" dual—front and rear.  
Driver's seat—Built over motor.  
Brakes—Four Wheel Drive foot brake external on four wheels. Emergency brake on rear wheels operated by hand lever.  
Fenders and service boards on front wheels.  
Equipment—Complete set of tools. Tool box, oil cans, horn. Hub cap, motor and magneto wrenches. One large Solar searchlight and Prest-O-Lite gas tank. Two kerosene side lamps and one tail



TRUCK FOR STREET CLEANING AND GENERAL PURPOSES.

ground that there is not sufficient work in sight to keep a large truck steadily employed with a single kind of body. For the purposes of street cleaning departments, the Front Wheel Drive Auto Co., Clintonville, Wis., has placed on the market a motor truck which seems to overcome this objection. The same machine can be used for at least three distinct purposes. These are: an ordinary five-ton truck for general hauling; a snow sweeper for winter; and either a sprinkling or flushing machine in summer. The commissioners of Lincoln Park, Chicago, Ill., have used one of these cars for a year with good results as a truck, sweeper and flusher. Twelve miles of driveway are kept clean winter and summer by this machine.

pels the car. There is a sub-transmission and clutch between the driving mechanism of the car and the sweeper.



HUBBARD'S ANCHOR LOOP EXPANSION BAR.

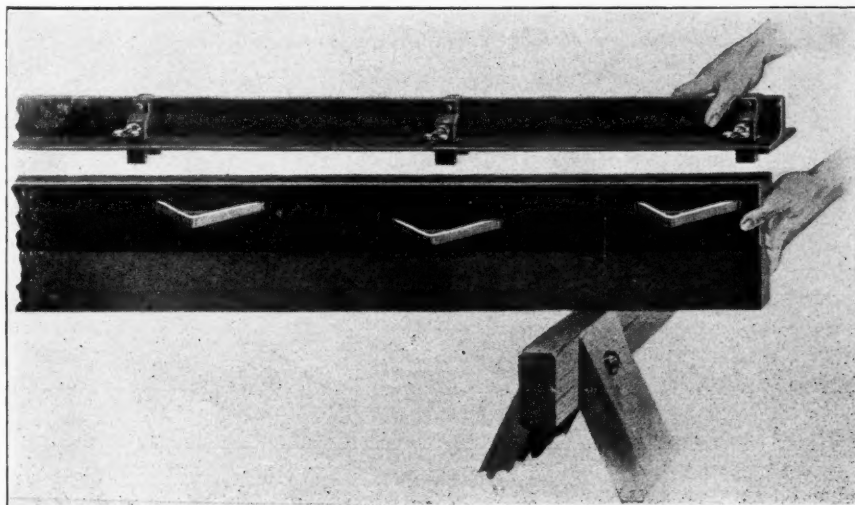
The operator controls the broom by means of a foot pedal, lowering and

lamp. One Stewart speedometer. Top, wind shield and curtains. One complete set of mud chains.

## REINFORCED JOINT.

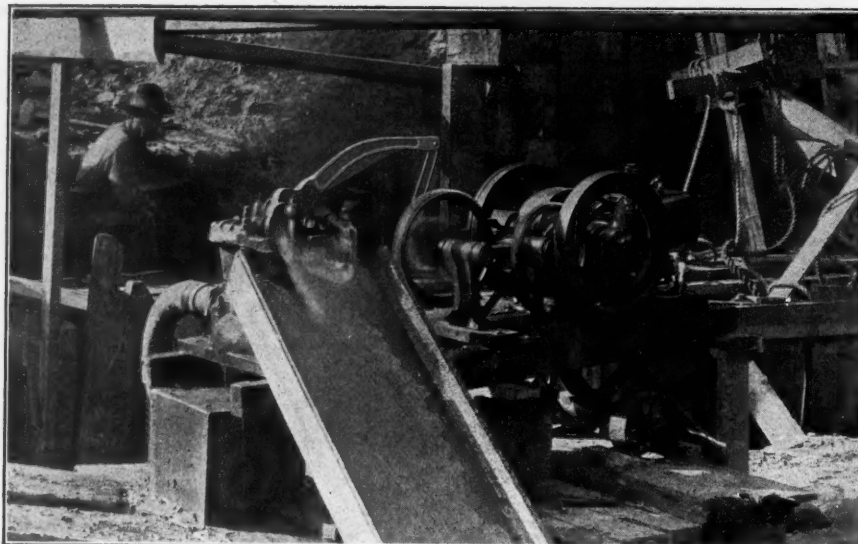
### Armored Joint for Concrete Pavements Provides Anchorage of Any Length.

Hubbard's Pressed Loop Expansion Bars for concrete roads and driveways which have been extensively used in the northwest are made by the Puffer-Hubbard Manufacturing Co., Minneapolis, Minn. The complete outfit consists of an installing device which is used temporarily in order that the joint may conform exactly to the contour of the road, two receiving bars for each joint between which the elastic felt or other material is held and the anchors made in two styles which are attached to the receiving bars. The illustration shows the joint complete with installing device as it is put together alongside the work. The ends of the



HUBBARD ARMORED JOINT AND INSTALLING DEVICE.





EUREKA PUMPING OUTFIT.

installing device—clamp some people call it—rest on the side rail. It is a heavy tee iron, rigid and curved to the crown of the pavement. Small clamps at intervals of two feet hold the receiving bars and filler securely in place. In construction the installing device is removed before the concrete has received its final set and the concrete accurately smoothed up to the joint.

By making two styles of expansion bars, the Puffer-Hubbard Company are able to fill the requirements of any set of specifications. The pressed loop expansion bar, made of mild steel 3-16 of an inch thick by 2½ inches wide, protects the joint against abrasion, while its loops placed at 12-inch centers tie them rigidly to the concrete.

The anchor loop expansion bar shown in the line drawing has a double hook on one side and a single hook on the other which serve the same purpose as the pressed loop bar. If the specifications require that the joint be anchored several inches in the concrete, this joint fills the requirements, as the anchor loop can be furnished any desired length.

#### WHEELER SIDEWALK PLOW.

**Favorite Plow for Street Departments  
—Has Adjustable Wingside.**

The Dyar Supply Company, 66 Broadway, Cambridge, Mass., manufacture the Wheeler Sidewalk Plow of which more than one thousand are in use in New England. It is hardly necessary to state that the snow fall in New England is very heavy and in most towns and cities the street departments clear snow off sidewalks and gutters. The cost of work done in this way is a negligible quantity as compared with what individual property owners would have to pay for hand shoveling.

The Wheeler plow has an adjustable wing which adapts it to wide or narrow walks. The wing can be quickly thrown in or out in passing trees without stopping the horse. It is also arranged so that it can be

raised, making it easy to go over rough walks, curbstones or in turning.

The plow is made either right or left handed. A right and a left handed plow can be connected in a few moments on the land side, making an efficient plow for breaking roads. A pole and special connection is provided for this purpose.

The regular size of the plow with wing closed is 3 feet 3 inches. The wing can be thrown out 5 feet 3 inches. The height of the mold board and wing is 25 inches. The length of the plow from point to end of wing is 7 feet.

#### EUREKA PUMPER.

**Diaphragm Pump and Gasoline Engine  
Made in Self-Contained Unit.**

The Eureka Machine Company, Lansing, Mich., make a self-contained gasoline pumping outfit consisting of a 1½ horsepower New-Way engine and a diaphragm pump capable of handling 3,500 gallons of water per hour. The convenience of the outfit and its adaptability for sewer contractors' use is shown in the illustration of Fred. H. Drucker's work in Cincinnati, O. The outfit on skids weighs only 550 pounds and on truck 700 pounds.

The New-Way gasoline engine is air cooled. The enclosed crank case pro-

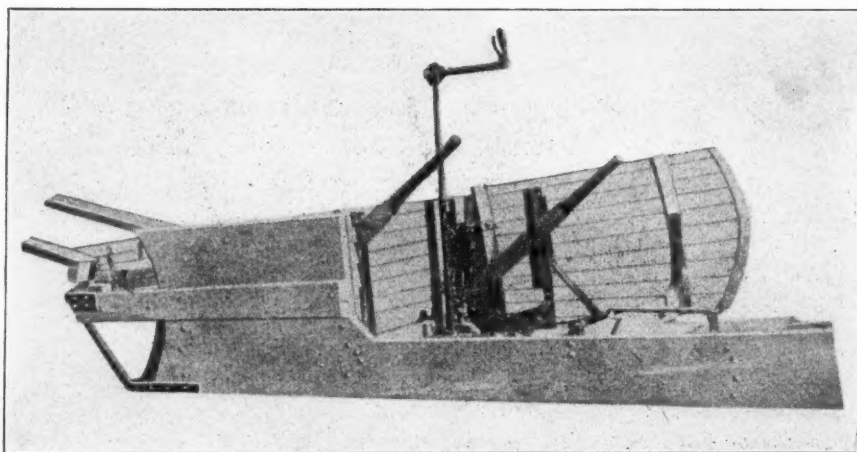
ducts cylinder, piston, and bearings from dust and dirt. There is but one lubricator. The manufacturer states that the cylinder, piston and rings are ground to the greatest possible degree of accuracy. The gasoline consumption is one and a half gallons per ten hours steady work.

#### INDUSTRIAL NEWS

**Cast Iron Pipe.**—Chicago.—Quotations: 4 inch, \$27, 6 to 12-inch, \$25; 16-inch and up, \$24. Birmingham. The new plant of the Standard Foundry Company, Anniston, Ala., has begun operation. The general feeling is hopeful. Quotation: 4-inch, \$22; 6-inch, \$10. San Francisco. Progress in financing numerous municipal projects gives considerable encouragement for the near future. New York. General demand is extremely light. Quotations: 6-inch; car loads, \$23 to \$24.

**Lead.**—Quotations: New York, 4.10c. St. Louis, 3.95c.

**Fireman's Helmet.**—A test of the Nasdco breathing helmet, manufactured by C. N. Gross, Cleveland, O., was recently made before safety director Bargar, fire chief Lauer and assistant chief Daniels, of Columbus, O. The voting house, after all crevices had been tightly closed, was filled with a smudge of burning feathers, rags, sulphur, chemicals and other gaseous products frequently encountered by firemen in fighting flames. With the protection of the helmet, a man entered the tightly closed booth and remained 30 minutes without experiencing any difficulty in his breathing or movements. This device consists of a canvas hood, somewhat similar in appearance to a diver's hood, with mica squares admitting light. This fits closely over the head and shoulders. From it trails a hose which reaches down to the floor, through which air is carried to the wearer. The principle employed in designing the device is founded on the natural law, that heat and heat products, smoke, fumes, etc., rise, leaving the greater amount of oxygen in a smoky room close to the floor. As long as there is a breath of oxygen left, it will be found at the floor.



WHEELER SIDEWALK PLOW.

**Chemicals.**—Chas. Cooper & Co., manufacturing chemists and importers, 194 Worth street, New York, issue a bulletin quoting prices for chemicals. Among those of interest to municipal departments are the following: Alum, powdered, technical, in bbls.,  $3\frac{1}{2}$ c. per lb.; aluminum sulphate, commercial technical, 6c. per lb.; copper, sulphate, extra, technical, in bbls., 6c. per lb.; copperas in bbls., 1c. per lb.; formaldehyde, technical, 38-40 per cent., 20c. per lb.

**Motor Fire Engine Test.**—A highly satisfactory test was made of a Watrous motor pumping engine furnished to the city of Bridgeport, Conn. High street hill was climbed at a speed of 25 miles per hour. At the pumping test water was raised 15 feet from the harbor. At a pressure of 140 pounds on the pump 840 gallons of water was delivered at the nozzle. With a small nozzle and pressure of 200 pounds on the pump, 325 gallons of water a minute were pumped. The pressure was run up to 250 pounds on the pump by attaching a smaller nozzle and longer lines of hose.

**Industrial Railway Equipment.**—The Easton Car & Construction Company, Easton, Pa., a new organization, of which W. E. Farrell is the leading spirit, has bought all stock, rights, plant, office records, equipment and good will of the Ernst-Wiener Company. While the change in ownership is complete, the old line of business will be conducted in industrial railway equipment—cars, track and other appurtenances. As a first example of a new progressive spirit, the fabrication of plate, tank and structural steel up to  $\frac{1}{2}$  in. in thickness has been added. The company has a newly erected plant at Easton completely equipped with new machinery, specifically adapted to the fabrication of the well-known Ernst-Wiener line. Everything will be sold hereafter under the trade name of the Easton Car & Construction Company. With a large stock of its products on hand the new organization is in a position to effect immediate deliveries.

**Texas Trap Rock.**—A basaltic rock formation has been discovered within one hundred miles of San Antonio, near the line of the Southern Pacific railroad in Uvalde county. It is expected that this rock will be extensively used in pavement and road work in San Antonio and probably in a considerable territory in the vicinity.

A sample of this Texas trap rock has been tested by the United States Office of Public Roads with the following excellent results:

A sample of this Texas trap rock has been tested by the United States Office of Public Roads with the following excellent results:

Weight per cubic foot.....	193	lbs.
Water absorbed per cubic foot.....	0.39	lbs.
Per cent. of wear.....	1.8	
French coefficient of wear.....	22.2	
Hardness.....	17.5	
Toughness.....	15	
Cementing value.....		Good

This is a hard rock, showing high resistance to wear, average toughness and good cementing value. Should make a very good road material.

**Yellow Pine Manual.**—The Yellow Pine Manufacturers' Association, George K. Smith, secretary, Wright Building, St. Louis, Mo., have published the fourth edition of their book called "Yellow Pine, A Manual of Standard Wood Construction," compiled by A. T. North. The fact that one-third of the entire lumber output of the United States is Southern yellow pine gives the manual such general value to city engineers, building inspectors, constructing engineers and others. The manual is made up mostly of tabular data regarding properties, safe loads, etc. The matter is authoritative and much of it not to be found elsewhere. The manual should have a place in every engineer's and architect's library. Its arrangement and indexing—there are nine pages of index—are such that the answer to any problem regarding the strength of wooden members can be easily looked up. Comparing this edition with former ones the chief change consists in grouping the timbers by the measure of their depths rather than by the measure of their breadths.

The book contains 140 pages,  $4\frac{1}{4}$  by  $6\frac{1}{2}$ . Copies may be obtained by application to G. K. Smith, secretary, Wright Building, St. Louis, Mo.

**General Electric Bulletins.**—The following bulletins have recently been published by the General Electric Company, Schenectady, N. Y.: A 4171, dealing with ventilated railway motors. A 4173, ventilated commuting pole railway motor. A 4174, motor driven exhaust fan outfits. A 4152, engine driven continuous current generators of the commuting pole type; the sizes run from 25 kw. to 250 kw. A 4176, high voltage oil break switch; these are for voltages from 70,000 to 110,000. A 4178, three-phase induction motor panels. A 4143, storage battery locomotives. These engines might be used by contractors under some conditions, perhaps in road work. The cost of operating per ton mile, with power at 2 cents per volt is given as 1.22 cents.

**Concrete Piles.**—The MacArthur Concrete Pile & Foundation Co., 11 Pine street, New York, has received the contract for installing the concrete pile foundations of the new fire house for the city of New York on Richardson street, near Leonard street, Borough of Brooklyn. F. — Felgenhauer Co., 4 Court Square, Brooklyn, contractor.

**Fire Apparatus.**—The Haney Apparatus Company, Tampa, Fla., will install a foundry pattern shop and machine shop to manufacture outside fire escapes, auto trucks and auto pumps.

**Cast Iron Pipe.**—James B. Clow & Sons are arranging to double the capacity of their cast-iron pipe plant at Coshocton, Ohio.

**Motor Truck.**—A Peerless end dump truck sold some time ago to James F. Nolen, contractor, Philadelphia, Pa., is said to be doing the work formerly done by nine teams. The truck is employed in road construction hauling

stone over a road having a 21 per cent. grade.

**Sewage and Garbage Disposal.**—The Sewage and Garbage Power Co., Chicago, Ill., have moved their office to Suite 408 No. 29 South LaSalle street.

**Crusher.**—The C. O. Bartlett & Snow Co., Cleveland, O., have issued Bulletin No. 42, describing crushers and pulverizers. These include a stone crusher of the Blohe type, a French tube mill and the Gardner a crusher of the hammer type.

**Lighting Standards.**—The Flour City Ornamental Iron Works Company, Minneapolis, Minn., manufacturers of ornamental lighting standards, has increased its capital stock from \$500,000 to \$1,500,000.

**Goulds Pumps.**—C. L. Newcomb, Jr., has been appointed to succeed G. B. Turner as Western Representative of The Goulds Mfg. Co., Seneca quarters will be at 12 Chamber of Commerce, Denver, Colo., and he will look after the company's interest in the Rocky Mountains and Northwestern territories. Previous to this connection Mr. Newcomb has had several years' experience in the pump business and he is well known to the trade in the territory he will travel.

#### Park Engineer Positions Open.

The City of New York desires to obtain a chief engineer for the Department of Parks for the borough of Queens, the salary for which is \$4,000, and a civil service examination will be held some time in the near future for filling this position. In grading the applicants, experience will count for one-half and a technical examination for the other half. Experience is required in municipal engineering work, the construction and maintenance of parks, and the organization and control of public works. The examination will be in landscape architecture, with a special knowledge of grading, highway construction, drainage, water supply and allied engineering and executive matters pertaining to the construction and maintenance of parks. Applicants must be residents of New York State and between 25 and 50 years of age. Further information may be obtained by addressing the Civil Service Commission of New York City.

#### Inspector of Public Works.

There are six vacancies in Manhattan Borough and four in Queens, New York, for inspectors of paving, sewers, etc. Applications must be made to the Civil Service Commission not later than December 19, and an examination taken in the practical knowledge of the details of materials and construction work of highways, pavements, sewers, water pipe line; laws, ordinances and specifications, regarding such work. Either a technical education or three years' practical experience. Usual salary, \$1,200.



# ADVANCE CONTRACT NEWS

## ADVANCED INFORMATION BIDS ASKED FOR

## CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

### BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS				
Cal., Los Angeles	Dec. 15	Street improving; cost, \$19,000	L. A. Bartlett, Engr.	
R. I., Providence	2.15 p.m., Dec. 15	Concrete sidewalks, etc.	J. H. Gainer, Mayor.	
Ariz., Prescott	noon, Dec. 15	State highway, 4.4 miles	R. T. Belcher, Clk Supv.	
Tex., Fort Worth	9 a.m., Dec. 15	Street improvement, 2,400 sq. yds.	F. J. Von Zuben, City Engr.	
La., New Orleans	11 a.m., Dec. 15	Filling in area for park extension	A. G. Ricks, Comr.	
N. D., Bismarck	8 p.m., Dec. 15	Grading	R. H. Thistlethwaite, City Aud.	
Tex., San Antonio	4 p.m., Dec. 15	Paving 11,000 sq. yds.	F. Fries, City Clk.	
Ind., South Bend	About Dec. 15	Grading, draining and paving	C. Seagwick, Co. Aud.	
Ind., Indianapolis	2 p.m., Dec. 15	Free gravel road	W. T. Patten, Co. Aud.	
Fla., Jacksonville	3 p.m., Dec. 15	Asphaltic concrete, 22,430; vitrified block, 31,964 sq. yds.	L. D. Smoot, Chief Engr.	
N. J., Elizabeth	8 p.m., Dec. 15	Brick pavement, 3,040 sq. yds.; new curb, 1,210 lin. ft., etc.	W. P. Neafsey, Str. Comr.	
O., Carey	noon, Dec. 15	Paving 6,000 lin. ft.	D. C. Angus, Vil. Clk.	
O., Columbus	2 p.m., Dec. 16	Medium traffic brick in Paint Twp., .75 miles	J. R. Marker, St. Hwy. Comr.	
O., Columbus	2 p.m., Dec. 16	Water-bound macadam in Mill Creek, 2 miles	J. R. Marker, St. Hwy. Comr.	
Ind., Lafayette	Dec. 16	Cresoted blocks; cost, \$60,000	C. Richards, Co. Surv.	
O., Columbus	Dec. 16	Improvement of Angola Rd.	Jas. R. Marker, St. Hwy. Comr.	
Ind., Indianapolis	2 p.m., Dec. 16	Gravel roads	W. T. Patten, Co. Aud.	
Neb., Omaha	9 a.m., Dec. 16	Pavement	E. J. Flynn, City Clk.	
Ind., Salisbury	Dec. 16	Highway construction	Co. Comrs.	
Ind., Covington	7.30 p.m., Dec. 16	Paving improvements, various materials; cost \$17,000	C. A. Baldwin, City Clk.	
Va., Ginter Park	Dec. 18	Street paving, 88,000 sq. yds.	G. C. White, Engr.	
Ill., Morgan Park	8 p.m., Dec. 18	Liquid asphalt paving	M. F. Kinney, Pres.	
Ind., Anderson	10 a.m., Dec. 18	Stoning or macadamizing highway	J. I. Anderson, Comr.	
Pa., Pottsville	10 a.m., Dec. 18	Gravel road	E. M. Bigelow, St. Hwy. Comr.	
Ind., Elwood	Dec. 18	Roads	City Engr.	
Mo., St. Louis	noon, Dec. 19	Reconstructing street; paving with brick, asphalt, bituminous and oil treatment	Bd. Pub. Imps.	
Mo., Kansas City	Dec. 19	Grading and macadamizing roads	Co. Clk.	
Fla., Ft. Myers	5 p.m., Dec. 20	Grading and paving streets with snell	D. W. Sumner, City Clk.	
Ind., Greencastle	2 p.m., Dec. 20	Gravel roads, 8 miles	C. I. Airhart, Co. Aud.	
Wash., Bremerton	Dec. 22	Regrading concrete walks, etc., \$8,500	J. C. Adams, City Engr.	
Wash., Olympia	2 p.m., Dec. 22	Highway construction, 1.4 miles	J. W. Roberts, Sec. Hy. Bd.	
La., Ville Platte	Dec. 23	Concrete sidewalk and curb, 9,000 lin. ft.	F. S. Roberts, City Engr.	
O., Cleveland Heights	Dec. 23	Brick, asphalt, macadam, etc., number of streets	H. H. Canfield, Vil. Clk.	
Wash., Port Angeles	Dec. 25	Road construction, cost \$110,000	C. J. Cannon, City Engr.	
Fla., Bartow	Dec. 29	Concrete sidewalk, 29,000 sq. yds.	B. J. Oeland, City Clk.	
Fla., Tarpon Springs	Dec. 29	Hard surfaced highway	L. D. Vinson, Co. Comr.	
Cal., Oakland	Dec. 29	Tunnel and highway; estimated cost, \$250,000	City Council.	
Va., Roanoke	Dec. 30	Macadamizing street	F. L. Gibboney, City Engr.	
Ind., Portland	Dec. 31	Road improvement	Comrs.	
O., Salina	Jan. 1	Macadam, 3 miles	R. D. Smalley, Co. Engr.	
Ia., Belle Plain	3 p.m., Jan. 5	Paving, 55,718 sq. yds.; cement curb, 13,570 ft.	W. M. Ewen, City Clk.	
Ind., Portland	Jan. 5	Gravel road	Comrs.	
Fla., Clearwater	Jan. 5	Hard surfaced highway	C. W. Weickling, Clk.	
Miss., Kosciusko	Jan. 6	Road improvement, 17 miles, gravel or crushed stone	W. B. Potts, Pres.	
Ind., Monticello	Jan. 6	Road construction	A. G. Fisher, Aud.	
Ind., Portland	Jan. 7	Construction of two roads	Comrs.	
O., Salina	Feb. 1	Macadam, 4 miles	R. D. Smalley, Co. Engr.	
Ind., Laporte	Feb. 2	Brick paving; cost, \$800	L. Drew, Engr.	
SEWERAGE				
N. J., Elizabeth	8 p.m., Dec. 15	Sewer construction	W. P. Neafsey, Str. Comr.	
Brazil, Rio Grande do Sul	Dec. 15	Sewerage system	Sr. Coronal Intendente Municipal.	
O., Grand View Heights	Noon, Dec. 15	Sanitary sewers	B. W. Jones, Vil. Clk.	
Ill., Kankakee	2 p.m., Dec. 15	Construction and extension of 16-inch sewer	De Lavery, Pres.	
Wis., Cumberland	2 p.m., Dec. 15	Drainage ditch	H. S. Comstock, Atty.	
O., West Park	noon, Dec. 15	Drainage	F. Feuchter, Vil. Clk.	
Okl., Henrietta	Dec. 15	Sanitary lateral sewer	City Clerk.	
Neb., Norfolk	5 p.m., Dec. 15	Sanitary sewer	City Clerk.	
Mich., Genesee	Dec. 16	Drain	A. H. Reid, Co. Drain Comr.	
N. J., Ridgewood	8 p.m., Dec. 16	Sanitary sewer, 7,500 lin. ft.; sewage force main, 3,400 ft.	F. W. Simonds, Engr.	
Ill., Chicago Heights	8 p.m., Dec. 16	East side storm water sewer system	M. H. McCoy, Engr.	
D. C., Washington	10.30 p.m., Dec. 16	Vitrified sewer pipe	Maj. F. C. Boggs, Gen. Pur. O.	
N. J., Newark	Dec. 16	Section 3 of the Passaic Valley Trunk Sewer	J. S. Gibson, Clk., Passaic Val. Sew. Comrs.	
Fla., Tampa	Dec. 16	Sewage system	City Clerk.	
O., Canton	10 a.m., Dec. 17	Mohler ditch	C. L. Stoner, Clk.	
O., Canton	noon, Dec. 17	Sewage treatment plant	R. F. Harbert, Dir. P. Serv.	
N. Y., Brooklyn	11 a.m., Dec. 17	Labor and material for sewer construction	L. H. Pounds, Boro. Pres.	
O., Cincinnati	Dec. 17	Intercepting sewer	V. T. Price, Dir. P. S.	
Mass., Boston	2.30 p.m., Dec. 17	Concrete sewers, 36-in. and 42-in.	F. D. Smith, Engr. Sew. Wks.	
Ind., Fort Wayne	Dec. 18	Drainage pumps	F. M. Randall, City Engr.	
N. Y., Brooklyn	Dec. 19	Sewers in several streets	L. H. Pounds, Boro. Pres.	
Fla., Fort Myers	5 p.m., Dec. 20	Improvements to sewerage system	E. W. Sumner, City Clk.	
O., Mt. Vernon	Dec. 22	Sewer system and disposal plant, \$42,000	C. M. Fairchild, Dir.	
O., Cleveland Heights	noon, Dec. 23	Sewers	H. H. Canfield, Clk.	
N. Y., Rochester	11 a.m., Dec. 30	Sewer in Woodbine Ave.	F. X. Pifer, Sec.	
Ia., Muscatine	Dec. 30	Drainage pumping plant	Co. Aud.	
Miss., Duncan	Jan. 1	Surface drainage	W. S. Bobo, Engr., Clarksdale.	
O., Nelsonville	about Jan. 1	6 to 14-foot sanitary sewer; estimated cost, \$85,000	Park Sniffon, Engr.	

## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Kan., Atchinson	.....About Jan.	1..	Sewer, 4,000 ft. 6, 8 and 10-inch.....	F. L. Altman, City Engr.
La., New Orleans	.....Jan.	6..	Pumps, 1 centrifugal, 11 screw; discharge pipes, gates, &c.	G. C. Earl, Gen. Supt.
WATER SUPPLY				
Ohio, Baltic	.....noon, Dec.	13..	Complete water works system.....	W. D. Fisher, Clk. Board Pub. Affairs.
O., Grand View Heights	.....Dec.	15..	Water mains .....	B. W. Jones, Vil. Clerk.
Kans., Arma	.....about Dec.	15..	Water system .....	A. C. Moore, Engr, Joplin, Mo.
Brazil, Rio Grande do Sul	.....Dec.	15..	Water works system .....	Sr. Coronel Intendente Mun.
Kans., Strong City	.....Dec.	15..	C. I. pipe, 120 tons; steel pipe; reservoir, pumps, etc.	E. E. Harper, Kan. City.
la., Fairfield	.....7 p.m., Dec.	15..	Steel tank on 100-ft. steel tower; cap., 150,000 gal.	W. L. Long, City Clerk.
O., Canal Dover	.....noon, Dec.	16..	C. I. water pipe .....	A. Nydegger, Treas.
Ill., Chicago	.....Dec.	17..	Centrifugal pump, 5,000,000-gal. cap.	J. F. Neil, Sec. So. Pk. Comrs.
Kan., Westmoreland	.....6 p.m., Dec.	17..	Deep well pump, oil engine, tank and tower.....	G. Huckstadt, Mayor.
N. J., Atlantic City	.....Dec.	18..	Constructing 40-inch cast-iron sycan.	H. Bacharach, Dir.
Mont., Great Falls	.....Dec.	18..	Concrete irrigation canal .....	U. S. Reclamation Service
New Zealand, Hastings	.....Dec.	18..	Turbo pumps, motors, suction pipe, etc.	town Clk.
Ill., Winchester	.....Dec.	19..	Water works system .....	Guy Paul, City Clk.
Fla., Mt. Myers	.....5 p.m., Dec.	20..	Improving water works system .....	E. W. Sumner, City Clk.
Pa., Coatesville	.....Dec.	22..	Concrete dam and reservoir .....	A. Potter, Cons. Engr.
Brazil, Therezopolis	.....Dec.	23..	Water works and sewage systems .....	Municipal Cham., Therezopolis.
O., Cleveland Heights	.....Dec.	23..	Water main, 6 and 8 inch.	H. Canfield, Clk.
Fla., Pensacola	.....2 p.m., Dec.	29..	Air compressor .....	A. Greenut, Mayor.
N. Y., Williamson	.....Jan.	1..	Water works, cost \$70,000 .....	H. C. Kittredge, Engr., Rochester.
Kans., Lakin	.....Jan.	1..	Digging of artesian well .....	Kearney Co. Comrs.
Ind., Mitchell	.....About Jan.	1..	Water and electric light plant .....	A. H. Kennedy, Rockport.
La., New Orleans	.....noon, Jan.	6..	Pumps and other water supplies .....	F. S. Shields, Sec. Sew. & Wat. Bd.
Mont., Columbus	.....Jan.	12..	Water works .....	G. A. Westover, Twn. Clk.
la., Winfield	.....About Jan.	15..	Water system .....	J. O. Knabourne, City Clk.
Neb., Bruning	.....Jan.	15..	Water works .....	G. G. Bruckert, Vil. Clk.
Can., Toronto	.....noon, Jan.	20..	Filtration plant .....	H. C. Hocken, Mayor
LIGHTING AND POWER				
Kans., Arma	.....about Dec.	15..	Electric light plant .....	A. C. Moore, Engr., Joplin, Mo.
Tex., Corpus Christi	.....Dec.	15..	Street lighting .....	City Engr.
N. Y., Little Neck, L. I.	.....Dec.	15..	Electric equipment for school .....	C. B. J. Snyder, Supt. Sch. Bd.
O., Cleves	.....noon, Dec.	15..	Electric lighting system .....	R. R. Robinson, Clk.
Ill., Downer's Grove	.....7:30 p.m., Dec.	15..	Power plant .....	B. C. White, Vil. Clk.
Minn., Ortonville	.....8 p.m., Dec.	15..	One exciter and one first-class high-speed engine.....	C. J. Stark, City Clk.
Pa., Philadelphia	.....noon, Dec.	16..	Telephone and electric light cable .....	M. L. Cooke, Dir.
Conn., Hartford	.....Dec.	16..	Erecting double light posts, 141; single light posts, 113.	Jos. Butts, Sec.
D. C., Washington	.....3 p.m., Dec.	16..	Electric equipment, heating, etc., at Winston-Salem; lighting equipment, etc., at Marietta, Tex.	Supv. Arch.
Ind., Indianapolis	.....10 a.m., Dec.	16..	Maintaining lights, etc., for county building.....	Jas. Kerban, Ch. Comrs.
Colo., La Junta	.....Dec.	16..	Electrical equipment of P. O. ....	O. Wenderoth, Wash., D. C.
Miss., Natchez	.....5 p.m., Dec.	17..	Lighting streets for five years.....	Mayor.
D. C., Washington	.....3 p.m., Dec.	18..	Lighting fixtures, etc., at La Junta, Colo.	Supv. Arch.
Fla., Fort Myers	.....5 p.m., Dec.	20..	Horizontal turbine pump .....	E. W. Sumner, City Clk.
Mo., St. Louis	.....Dec.	20..	Conduit and wiring system .....	O. Wenderoth, Supv. Arch., Washington, D. C.
Ga., Atlanta	.....11 a.m., Dec.	20..	Lighting fixtures and lamps .....	S. Smith, Ch. Road Comm.
Mass., Springfield	.....Dec.	22..	Electrical work .....	Comm. City Council.
Can., Yorkton	.....Dec.	22..	500 D. H. P. combined unit .....	M. M. Inglis, Elec. Engr.
N. J., Metuchen	.....8 p.m., Dec.	23..	Street lighting for five years.....	H. S. Wilson, For. Clk.
D. C., Washington	.....Dec.	27..	Conduit & lighting fixtures, Post Office, Macomb, Ill.	Supv. Arch.
Ind., Indianapolis	.....10 a.m., Dec.	29..	Lighting and heating soldiers' monument .....	G. B. Menzies, Pres.
Pa., Philadelphia	.....noon, Dec.	31..	Electric light fixtures, etc.	E. L. Tustin, Recorder.
Can., Calgary	.....5 p.m., Dec.	31..	200 k.w. traction motor generator, switchboard, etc.	T. L. Trumbull, Cons. Engr.
Ind., Mitchell	.....About Jan.	1..	Electric light plant .....	A. H. Kennedy, Rockport.
Minn., Walker	.....2 p.m., Jan.	2..	Power plant .....	C. H. Johnson, Arch., St. Paul.
D. C., Washington	.....3 p.m., Jan.	2..	Lighting fixtures, etc., at Brigham City, Utah.....	Supv. Arch.
Neb., Bruning	.....Jan.	15..	Lighting plant .....	G. G. Bruckert, Vil. Clk.
Ga., Atlanta	.....Jan.	20..	Lighting fixtures and lamps .....	Co. Comrs.
La., New Orleans	.....noon, Jan.	30..	Electrical machinery, drainage canal work.....	G. G. Earl, Gen. Supt.
FIRE EQUIPMENT				
Can., Winnipeg	.....11 a.m., Dec.	15..	260 H.P. motor hose wagon; one 75 H.P. motor aerial ladder .....	M. Peterson, Sec.
Va., Suffolk	.....Dec.	18..	Two motor tractors, one ladder truck.....	City Clerk.
Wash., Everett	.....Dec.	22..	Motor triple combination apparatus.....	City Clk.
BRIDGES				
Me., Orrs Island	.....Dec.	13..	Bridge .....	G. B. Merrill, Engr., Portland
Neb., Omaha	.....noon, Dec.	13..	Constructing and repairing bridges.....	F. Dewey, Clk.
Ind., Richmond	.....11 a.m., Dec.	13..	Approach to bridge .....	L. S. Bowman, Co. Aud.
S. D., Huron	.....2 p.m., Dec.	16..	Construction and repairing bridges, 1914 .....	E. C. Ackerman, Co. Aud.
O., Bryan	.....2 p.m., Dec.	16..	Culverts and bridges .....	J. R. Marker, St. Hwy. Comr.
O., Washington C. H.	.....2 p.m., Dec.	16..	Culverts and bridges .....	J. R. Marker, St. Hwy. Comr.
Iowa, Maquoketa	.....2 p.m., Dec.	18..	Concrete bridges .....	J. F. McCollough, Co. Engr.
N. Y., White Plains	.....11 a.m., Dec.	22..	Two-leaf bascule lift bridge .....	H. G. Green, Clk. Bd. Supv.
Mont., Great Falls	.....Dec.	22..	Pratt truss highway bridge, two span.....	U. S. Reclamation Serv.
O., Akron	.....Dec.	22..	Substructure of bridge .....	C. L. Bower, Co. Clk.
Ariz., Wickenburg	.....10 a.m., Dec.	22..	Reinforced concrete bridge .....	Jas. Miller, Jr., Clk. Bd.
S. D., Elk Point	.....noon, Dec.	23..	Steel, concrete and wood bridges .....	Ed. Holden, Co. Aud.
Mo., Joplin	.....Dec.	30..	Concrete viaduct .....	W. T. Brooks, Engr, Kansas City.
O., Hamilton	.....Jan.	1..	Concrete or steel bridge, 650-ft. span .....	F. Hemmerl, Engr.
S. D., Desmet	.....1 p.m., Jan.	6..	Steel or reinforced concrete bridges .....	W. M. Look, Co. Aud.
S. D., Woonsocket	.....noon, Jan.	6..	Steel and concrete bridges for 1914.....	J. Kingsburg, Co. Aud.
S. D., Aberdeen	.....Jan.	6..	Six bridges .....	Co. Comrs.
S. D., Canton	.....Noon, Jan.	7..	Bridges and culverts during 1914.....	T. O. Torbison, Aud.
Iowa, Charles City	.....noon, Jan.	7..	Bridges and culverts .....	H. B. Rosencranz, Co. Aud.
S. D., Clear Lake	.....2 p.m., Jan.	8..	Steel and concrete bridges.....	A. L. Larsen, Co. Aud.
MISCELLANEOUS				
S. D., Vermillion	.....2 p.m., Dec.	14..	Safe for treasurer's office.....	J. T. Olson, Co. Aud.
R. I., Providence	.....215 p.m., Dec.	15..	Implement building .....	W. C. Palkey, Clk.
Ga., Augusta	.....4:30 p.m., Dec.	16..	Fire house .....	L. C. Hayne, Mayor
Ill., Chicago	.....11 a.m., Dec.	16..	Substructure for pier .....	E. C. Shankland, Ch. Comm.
Tex., Abilene	.....noon, Dec.	18..	Fireproof court house .....	E. M. Overshiner, Co. Judge.
D. C., Washington	.....3 p.m., Dec.	19..	Construction of Post Office at Du Quoin, Ill.	O. Wenderoth, Supv. Arch.
Wis., Madison	.....10 a.m., Dec.	19..	Foundation work .....	L. F. Porter, Sec.
D. C., Washington	.....3 p.m., Dec.	20..	Extension & remodeling customhouse at St. Louis, Mo.	O. Wenderoth, Supv. Arch.
Minn., Carlton	.....10 a.m., Dec.	22..	Two-story jail and sheriff's residence.....	A. R. Norman, Co. Aud.



## BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
Can., Hanover, Ont.		Dec. 22.	Erecting public building	R. C. Desrochers, Sec. D. P. Wks., Ottawa.
Fla., Jacksonville		3 p.m., Dec. 22.	Unloading platform	Ch. Engr.
D. C., Washington		10.30 a.m., Dec. 26.	Wire cable, steel and iron pipe, etc.	Maj. F. C. Boggs, Gen. Pur. Off.
Can., Vancouver		Dec. 29.	Erecting hospital	R. C. Desrochers, Ottawa.
Ill., Chicago		2 p.m., Dec. 29.	Rubber tires, inner tubes, etc.	Gen. Supt. Police, City Hall.
Cal., Richmond		Dec. 29.	Harbor work	City Clerk.
Ky., Taylorsville		Dec. 31.	Fireproof court house	S. K. Baird, Co. Judge.
O., Cleveland		Jan. 1.	Four-story hospital, cost \$150,000.	Trus. St. John's Hospital.
Ill., Chicago		noon, Jan. 5.	Rapid transit subways	E. Block, Ch. Trans. Com.
Can., Megantic, Ont.		Jan. 5.	Concrete dam	J. Ray, Clk.
S. D., Flandreau		2 p.m., Jan. 6.	Court house	G. A. Chorpeneing, Co. Aud.
Colo., Grand Junction		3 p.m., Jan. 6.	U. S. Post Office	O. Wenderoth, Washington, D. C.
Miss., Pass Christian		Jan. 6.	Shell crusher	City Council.
O., Salem		3 p.m., Jan. 7.	U. S. Post Office	O. Wenderoth, Supv. Arch., Washington, D. C.

## STREETS AND ROADS

**Mobile, Ala.**—Twelfth paving venture of city of Mobile was launched in reading of a resolution before Board of City Commissioners. Proposed venture includes territory on Adams and Congress Streets, from Claiborne to Royal St., and Spring Hill Road, from Broad St. to Ann. Cost is something over \$70,000. Resolution calls for two inches of asphaltic concrete wearing surface over four-inch concrete base.

**Bisbee, Ariz.**—Bills for paved street from Bisbee to Warren will be advertised for after next meeting of Board of Supervisors. Distance to be paved will not be in excess of 2.45 miles or 39,560 sq. yds. Bids for either bitulithic pavement in any form, Warrenite or a Macadam concrete will be asked for. What cost will be cannot be stated until bids are in, but it will probably be about \$30,000.

**Phoenix, Ariz.**—Street improvement bonds in sum of \$25,000 have been approved.

**Lodi, Cal.**—Supervisor C. L. Newton has selected 11 miles of Co. rd. that he will improve by grading, sanding and oiling, and where there are adobe spots and clay roads will be macadamized. All of this improvement is to be done west of Lower Sacramento road.

**Pasadena, Cal.**—Paving of McDonald St. has been ordered.

**Redwood City, Cal.**—Bids have been ordered by Bd. of Spvs. for two more pieces of work to be done under \$1,250,000 bond issue for good roads. First work will be paving of Middlefield Rd. from Redwood City south through Atherton and Menlo to county line. Supervisors have also asked for bids for grading of scenic boulevard over mountains from Colma to Edgemar, on coast side. Cost of work will be about \$89,000.

**San Francisco, Cal.**—Rebuilding of the Sierra Highway is planned.

**Suisun, Cal.**—Plans for raising of big road fund and expenditure of money for roads by commission appointed by various Chambers of Commerce throughout county have been made at good roads meeting held in Armijo Hall.

**Stockton, Cal.**—Work on concrete curbs and gutters on Yosemite Terrace will be started within next few days. Contract calls for expenditure of about \$10,000. Concrete sidewalks will call for expenditure of about same amount.

**Bridgeport, Conn.**—Petitions have been received for various street improvements.

**Devon, Conn.**—Street improvements are being planned.

**Waterbury, Conn.**—Sum of \$248,201 has been appropriated in budget for 1914 for St. Dept.

**Jacksonville, Fla.**—Improving and extending of Hogan St. is being discussed.

**Jacksonville, Fla.**—County Commissioners will put in motion necessary steps for realizing cash from sale of \$600,000 worth of bonds recently authorized for building of brick roads in this county. It is intention to cooperate with adjoining counties so that roads of this county, when they are completed, shall make link in vast system of better roads that will cover whole state and eventually whole South.

**Manatee, Fla.**—Citizens have voted in favor of \$60,000 bond issue for good roads.

**Pensacola, Fla.**—A paved highway from Pensacola to Flomaton, Ala., distance of 42 miles, is favored by Chmn. Barrineau, of Escambia Bd. of Comrs., who intends to bring matter before Bd. for discussion at next meeting. He will

propose bond issue for this purpose and for building bridges at next meeting of Board.

**Sorrento, Fla.**—Lake Co. has voted in favor of 200 miles of hard oiled roads.

**Macon, Ga.**—Vitriified brick paving will be recommended for Vineville Ave. and Main St.

**Chicago, Ill.**—Changing of La Salle St., from Jackson Boulevard to Lincoln Park, into a boulevard will probably be authorized.

**Freeport, Ill.**—It has been decided to recommend ordinance that will provide for brick paving for next year, a great number of property owners favoring brick. Streets will be reduced to width of 25 ft. in order that expense will not bear heavily on property owner. Brick will be laid on foundation of concrete. Distance is about 6,500 lin. ft. The East Freeport streets to be paved with brick are the following: Henderson, Crocker, Louise, Orin, Wilbur, Adelbert, and Harris. Considerable work is to be done next year on west side of river. Ordinance has already been adopted for paving of Winnesheik St. Other west side streets to be paved include Benton and Delaware Sts. and east end of Douglas Ave.

**Springfield, Ill.**—County Highway Commissioners of Sangamon and Morgan counties are considering plan for construction of a 40-mile stretch of road connecting Springfield and Jacksonville, to be done by convict labor.

**Sterling, Ill.**—Permanent road building in Sterling township is receiving considerable attention, and many people believe that either brick or concrete should be used on main traveled roads.

**Fort Wayne, Ind.**—Corkscrew curve, the danger spot on Leo Road, five miles north of city, will soon be a thing of the past. Commissioners have been notified that residents of that section will construct ditch, which will cut off big curve in creek. This curve makes necessary curve in the road. Bridge will be built by county commissioners over old creek bed, or section of roadway will be built through it, and road will be made straight at this point.

**Huntington, Ind.**—Ogan Ave. will be improved by grading, application of crushed stone and oil next spring, the work to be commenced just as soon as the weather will permit. Work will extend entire length of the avenue, from Etna to Salamonie Ave.

**Portland, Ind.**—Council has adopted plans, specifications and resolutions for improvement of Meridian St. south from bridge to Floral Ave. Specifications call for street 30 ft. wide.

**Portland, Ind.**—Commissioners have adopted new plan for letting of contracts for construction of new roads in county and will let contract for one road at a time. Four new roads will be let within next six weeks.

**Portland, Ind.**—County Treasurer John B. Ropp has sold two issues of gravel road bonds.

**Portland, Ind.**—County Commissioners have opened bids for construction of two highways in county—Jacob Rupel Rd., in Jackson township, and the J. L. Peterson Rd., in Knox township. Following bids were received for construction of Jacob Rupel Rd.: Wheat & Bone, \$17,850; L. O. Bears & Co., \$17,499; O. L. Jones, \$19,655; D. O. Teeters, \$19,890, and Lowery & Mannix, \$18,990. Estimate of engineer on this road was \$21,989.45. Following bids were received for construction of J. L. Peterson Rd., in Knox township: Luttmann & Fenrig, \$21,798; O. L. Jones, \$22,250; D. O. Teeters, \$23,375; Lowery & Mannix, \$22,900, and Charles A. Dull, \$21,994. Estimate

of engineer on this improvement was \$24,915.00. After commissioners had investigated bids offered they decided to reject all bids and readvertise for bids at later date.

**Portland, Ind.**—Improvement of South Meridian St. in this city, one of main thoroughfares leading into city from south, has been ordered improved by paving by City Council. Cost has been estimated at \$28,500, not including new bridge across Salamonie River which county will bear expense of, estimated at \$11,000.

**South Bend, Ind.**—Petition asking for appropriation for pavement on Pennsylvania Ave has been filed with Board of Public Works.

**Warsaw, Ind.**—Road election will be held in Lake Township of Kosciusko County on Tuesday, Jan. 6. This is first application of "three mile" road law in this county. Petitions were filed for improvement of 10 miles of highway.

**Atchison, Kan.**—Instructions have been issued to City Engineer to proceed with preliminaries for paving of South Sixth St. to close gap between reservoir and Jackson park. It is expected that this paving will be started March 1.

**Lawrence, Kan.**—Resolutions have been adopted for paving of several streets. F. D. Brooks is City Clerk.

**Lawrence, Kan.**—Following paving has been ordered: Vermont St., from Merchant to Hosford Ave.; Hancock St., from Delaware to Haskell Ave.; Sherman St., from Louisiana to Copley; the alley first west of New York, between Hancock and Lee Sts.; Kentucky St., from Adams to Bews Ave.; Conklin St., from Rogers to Lot 1, Block 2, University Pl.; Louisiana St., from north line of Edgemoor Drive to Bews Ave.; Louisiana St., from Henry to Winthrop, resurfaced and repaved; alley first west of Connecticut from Henry to Winthrop; alley first west of Vermont from Berkley to Warren; Pinckney St., from Indiana to Missouri. A new style of paving, "Asphaltic Concrete" was ordered in on two small sections of street—Copley St., from Rogers to Sherman and Rogers St., from Conklin to Copley.

**Newton, Kan.**—Petition has been presented asking for \$3,000 for a sand hill road.

**Topeka, Kan.**—Improvement of various streets have been authorized. C. B. Burge is City Clk.

**Lexington, Ky.**—Resolutions have been adopted for various street improvements.

**Portland, Me.**—Proposed Federal aid highway between Portland and Bath is assured, the United States Government having notified Gov. Haines of its approval of project and also of fact that it had appropriated additional \$15,000 in addition to its original \$50,000 in order to insure very best type of construction for this important highway and to make it a sample for rest of country to follow. This makes \$65,000 that Federal Government has agreed to give State, providing Maine will raise \$130,000.

**Annapolis, Md.**—The Governor, Comptroller of the Treasury and Treasurer of the State of Maryland will receive proposals for \$250,000 4 per cent. public highway loan of 1910, Series "D." Said proposals must be delivered, sealed, to the Treasurer of the State, at Annapolis, on or before 12 o'clock noon of the sixth day of January, 1914. Murray Vandiver is Treasurer.

**Baltimore, Md.**—Following report made by City Engr. McCay to Board of Estimates that body directed him to proceed at once with repairs to certain portions of bed of Lexington St., between Charles St. and Park Ave.

**Baltimore, Md.**—According to calculations of Chairman O. E. Weller of State Roads Commission, 300 miles of State road can be completed next year if Legislature provides money in time.

**Hagerstown, Md.**—State Roads Commission has approved plans prepared by Ernest R. Darby, surveyor for this county, for building of three and a half miles of model road from Smithsburg to Pennsylvania line to connect with Pennsylvania State road at Waynesboro. New road will cost \$4,000 a mile, or \$14,000, according to estimate made by Mr. Darby, which is about half of estimated cost of construction as of State Roads Commission.

**Boston, Mass.**—Improvement of Copley Square is being considered.

**Duluth, Minn.**—Special street improvements approximating \$500,000, with order in which they will be made, have been outlined by Comr. Roderick Murchison, head of Wks. Div., for season of 1914.

**Eveleth, Minn.**—Petition will be presented to County Commissioners asking for new road five or six miles long, to connect with territory south of Eveleth.

**St. Paul, Minn.**—University Ave., the biggest single paving job on tentative program for 1914, will be paved next year. The Board of Public Works determined this by adopting favorable report on preliminary order calling for improvement of street from Dale St. to city limits.

**Gulfport, Miss.**—City Commissioners have announced that between first of year and spring 35,000 yards of paving will be done in Gulfport. Concrete will be used, and 25th Ave. and several streets running into beach drive will be paved. Bonds will be issued to pay for the work.

**Beverly, N. J.**—Beverly Commissioners have decided to install system of uniform concrete sidewalks and curbs throughout city. Improvement will cost \$50,000.

**Elizabeth, N. J.**—Ordinance has been adopted on third reading providing for paving of Broadway, from Reid to Spring Sts., with block.

**Long Beach, N. J.**—Widening of Monmouth St. is being discussed.

**Newark, N. J.**—Ordinances have been adopted for opening of various streets in city.

**Passaic, N. J.**—The Bergen Board of Freeholders in Hackensack has authorized issuing of bonds in sum of \$350,000, which is money to be expended for county roads.

**Red Bank, N. J.**—Borough Engineer has been instructed to prepare specifications and advertise for bids for paving of Mechanic St., between Broad St. and Globe Court.

**Spring Lake, N. J.**—In three communications to Boro Council Spring Lake Board of Trade urged early improvement of streets in southern end of Spring Lake.

**Trenton, N. J.**—Resolution is being considered for widening of Montgomery between 24th and 26th Sts.

**Binghamton, N. Y.**—Improvement of large number of streets is being planned for 1914.

**Brooklyn, N. Y.**—Lowering of Railroad Ave. to meet grade of intersecting streets is being advocated.

**Brooklyn, N. Y.**—At last meeting of Board of Estimate and Apportionment, final authorizations were granted for eighteen public improvements in Brooklyn, estimated cost of which is \$105,700, and preliminary authorizations in same borough for seventeen, estimated cost, \$151,100. Most important of above-named undertakings is proposed grading of 86th St., from Bay Parkway or 22d Ave. to Gravesend Ave., twenty-four blocks.

**Elmsford, N. Y.**—Plans are going forward for laying sidewalks of concrete from Catholic Church, at top of Elmsford Hill, on White Plains Road, westerly along upper side of that highway to railroad crossing. It is hoped that walk will be continued as far along road to Tarrytown as Colonial Hall.

**Hudson, N. Y.**—Construction of better sidewalks is planned for streets of city.

**Newburgh, N. Y.**—Authorization for issue of \$98,500 of improvement bonds of city has been authorized by City Council, money to be raised to be used to defray expenses arising from paving of Liberty St. from Broadway to South St., and from South St. to the north line of city; paving on Broadway, from Colden St. to brick pavement, and Fullerton Ave. sewer.

**Newfane, N. Y.**—Charles Miller has received letter from State Highway Commissioner saying that contracts for road

between Olcott and Lockport and for balance of uncompleted roads on route 30, will be relet and that contractors will resume work upon them in spring.

**Syracuse, N. Y.**—It is expected that contract will be awarded this week for paving South Wilbur Ave., from Gifford to Hamilton St., and that work will be started in early spring. This is one of three contracts for continuous pavement from Gifford St. to Milton Ave. and Chemung St. Other sections are Herkimer St., from South Wilbur Ave. to Willis Ave., and Willis Ave., from Herkimer St. to West Genesee St., and Willis Ave., from West Genesee St. to Milton Ave.

**Syracuse, N. Y.**—Two petitions for designation of materials for Lodi St. pavement are being circulated among property owners along street. One is for asphalt and the other for brick. With completion of improvement street will be paved nearly its entire length from Burnet Ave. north. Section between Green and James Sts. has been paved, and present proceedings call for improvement in five different wards, the Fifth, Sixth, Fourth, Third and Second, extending to Union Place. Work will cost about \$80,000 and will be one of largest paving contracts recently undertaken. The lowest bids were \$79,142.50 for asphalt on ten-year guaranty and \$78,878.50 for asphalt on a five-year guaranty, both submitted by F. J. Baker. If asphalt under a ten-year guaranty with ordinary combination for street car tracks and the sides of the street on grades is designated, lowest proposal is \$81,002.50, by Warner-Quinlan Asphalt Company. Present specifications call for guaranty of two years on brick pavements, and if this material is designated lowest bidder is Charles Bonn at \$83,034.50.

**Syracuse, N. Y.**—Alderman Cawley has adopted two ordinances declaring intention to order paving of Turtle and Bear Sts., between North Salina St. and Third North St. Alderman Coyne had vitrified brick and sandstone curbing designated as materials for paving South Wilbur Ave., from Gifford St. to Tompkins St. It is expected that contract will be awarded in a few days.

**Hendersonville, N. C.**—Preparations are being made for paving of Fifth Ave. in this city from Main St. to corporation limits, distance of one mile.

**High Point, N. C.**—Plans are on foot for immediate construction of sand clay road, from Mechanicsville, northern suburb of the city, to Davidson County line.

**Akron, O.**—Ordinances have been adopted for various street improvements.

**Cincinnati, O.**—Plans have been adopted by Good Roads Committee of Chamber of Commerce to enter actively into co-operation with officials and farmers of Hamilton County to obtain better roads in county.

**Columbus, O.**—Councilman Alcott has presented to Council ordinance appropriating \$20,000 for widening of North High St. from Union Station to Fifth Ave.

**Dayton, O.**—Co. Comrs. have received communication from State Highway Comr. James R. Marker directing them to make formal application for state aid in matter of reconstructing main market and inter-county roadways. Application for 50 per cent. aid which state is to give all counties must be made before first of year. As previously announced, Comrs. here will make application for 20 miles of brick roadway for five main market roads leading out of Dayton and Montgomery Co. will have to direct issuance of special bonded indebtedness to take care of its share of the cost.

**Dayton, O.**—City Council has issued bonds in sum of \$83,500, of which \$13,500 is for purpose of paving city's share of the cost of paving Bowen St., from Wyoming St. to Lorain Ave.; Broadwell, from Stratford Ave. to alley north of First St.; Findlay St., from First St. to Fifth St.; Herman Ave., from Forest Ave. to Miami River Bridge; Salem Ave., from Cottage Grove Ave. to the corporation line, and Springfield St., from old corporation line to new corporation line.

**Youngstown, O.**—Ordinance has been passed providing for bond issue for street improvements.

**Altoona, Pa.**—Ordinance has been passed for paving of Fourth Ave. between 24th and 26th Sts.

**Meadville, Pa.**—Paving of Washington St. will be 28 ft. wide.

**Meadville, Pa.**—The new administration expects to let contracts in January or not later than February for about 4½ miles of new paving. B. F. Miller, Jr., City Engineer.

**Philadelphia, Pa.**—Forty-fourth St. is to be opened through Kirkbride's insane asylum from Market St. to Haverford

Ave., according to ordinance passed by Councils. Paving of Reed St. with wood blocks from Fourth to Fifth St., near Mount Sinai Hospital, was also authorized. Cobbs Creek Parkway will be opened to its full width from Baltimore Ave. to Hoffman Ave. by action of Councils. Thirty-second St. is to be opened from Reed to Tasker St.

**York, Pa.**—A delegation of property owners of Fawn township, headed by Dr. Vallie Hawkins, has appeared before County Commissioners to urge their approval for construction of 23,700 additional feet of good roads in that township with state aid. Improvements desired are to begin at state road at New Park and extend eastwardly on old Peach Bottom Rd. 13,200 ft. to western limit of Fawn Grove; thence from eastern limit of Fawn Grove over Peach Bottom Rd. 10,500 ft. to Peach Bottom township line. Connecting link in Fawn Grove, it is proposed, to have improved later, giving continuous improved highway of more than 11 miles.

**Providence, R. I.**—Resolution directing committee on highways to make thorough investigation into methods of road oiling, and to report with estimates of cost of maintaining and operating municipal oiling department for slightly over 200 miles of macadam highways in this city, will be presented in Common Council by Councilman Edward E. Austin of Second Ward.

**Bristol, Tenn.**—It is probable that \$100,000 more of good roads bonds will be issued by Sullivan Co. Court, for purpose of completing roads already laid out and building others.

**Erwin, Tenn.**—Movement is on foot to issue bonds for road purposes.

**Knoxville, Tenn.**—Grading of about two blocks of Market St. is being planned.

**Winchester, Tenn.**—County Court of Franklin County will call election on question of bond issue for pikes. Different routes of roads to be built have been laid off. Total will be about 116 miles.

**Alice, Tex.**—Unconditional sealed bids addressed to Judge W. R. Perkins, County Judge of Jim Wells County, Texas, will be received at his office until 9 o'clock p. m. on Dec. 15, 1913, for the purchase of \$125,000 of road bonds of Jim Wells County, Texas, dated Nov. 17, 1913.

**Belton, Tex.**—A good roads bond election will be held in Justice Precinct No. 3, Dec. 20, for purpose of determining issuance of road bonds in sum of \$30,000.

**Bracketville, Tex.**—The taxpayers of this county recently voted issuance of good roads bonds to amount of \$80,000. Bonds will be disposed of at early date, and actual work will soon commence on system of highways throughout Kinney County.

**Eagle Pass, Tex.**—Election will be held Dec. 16 for voting on question of issuing \$60,000 in bonds for street and park improvements.

**Galveston, Tex.**—Bids will be received by J. M. Murch, County Auditor, until 11 a. m., Dec. 10, for \$250,000 special road bonds.

**Greenville, Tex.**—Commissioners' Court of Hunt County has ordered election to be held in this county on Dec. 27 for purpose of issuing \$400,000 worth of bonds for construction of eighty miles of pike roads throughout county.

**Houston, Tex.**—About 20 miles of paving will be laid in a short while.

**Huntsville, Tex.**—The \$150,000 road bond election held in this county recently carried by overwhelming majority. Proceeds of this election will be used in building portion of Dallas-to-the-Gulf air line.

**San Antonio, Tex.**—Large number of bonds have been issued for street improvement work (see misc.).

**Streetman, Tex.**—As result of action taken by Freestone County Commissioners, the taxpayers in Precinct No. 2 will vote on issuance of a \$50,000 road bond election Dec. 16.

**Teague, Tex.**—Dec. 16 is date named by Commissioners' Court of this place to vote on \$150,000 good roads bond election. Much interest is being manifested in project. The precinct concerned embraces Teague and larger towns of Freestone County.

**Winnsboro, Tex.**—City of Winnsboro will expend approximately \$16,000 on streets within next few months.

**Puyallup, Wash.**—County surveyors are at work on road between Sumner and Pierce County Poor Farm. It is said the county will make this hard surface road if adjoining property owners will deed enough land to make 60-ft. right-



of-way. Work will commence on road, which is about a mile and a half long, the first of year, if right-of-way is secured.

**Seattle, Wash.**—Resolutions have been adopted for improvement of various streets.

**Spokane, Wash.**—Bids have been opened by City Council on four street improvement projects and in every instance contractors were below estimate of city engineer. Mitchell Bros. were low bidders on largest contract let, grading and curbing of Broad Ave., between Magnolia and Lidgerwood Sts. Bids on the curbing of Jackson Ave., Monroe to Cedar St., were Otto Hubenthal, \$1,142; F. E. Marton, \$1,119; H. C. Root, \$1,115; G. H. Weller, \$1,190; A. D. & F. B. Robinson, \$1,094; C. M. Payne, \$1,095; J. B. Mitchell, \$1,119. The engineer's estimate is \$1,200. Bids on the grading and ballasting of Trent Ave., between the West Olive Ave. bridge and vacated Grant St., were: J. B. Mitchell, \$1,500; A. Wold, \$1,695. The engineer's estimate is \$1,860. Bids on grading and curbing of Broad Ave., Magnolia to Lidgerwood Sts., were: A. D. & F. B. Robinson, \$7,943; C. M. Payne, \$7,400; Mitchell Bros., \$6,898; Engineer's estimate, \$8,950. Bids on sidewalks of Broad Ave., Magnolia to Lidgerwood Sts., were: F. E. Martin, \$7,244; A. D. & F. B. Robinson, \$5,997; C. M. Payne, \$6,289; Mitchell Bros., \$6,400. All bids were submitted to Commissioner of Public Works Z. E. Hayden for recommendation.

**Appleton, Wis.**—Movement has been started for construction of highway over Fox River valley from Fond du Lac to Green Bay.

**Superior, Wis.**—Petition has been received asking that city pave West Fifth St. from L Ave. to Nettleton Ave. with a permanent paving on concrete base.

#### CONTRACTS AWARDED.

**Gadsden, Ala.**—Contract for paving Forest Ave., from Sixth to Seventh St., and Seventh St., from Forest Ave. to Louisville & Nashville Railroad Company's right-of-way, to Goodrich & Crinckley, Anniston, Ala., at \$8,598.80.

**Guntersville, Ala.**—By Marshall Co., to F. S. & W. H. England Albertville, Ala., to grade road. F. D. Kern is Engr.

**Montgomery, Ala.**—To K. E. Kunkle, Dayton, O., contract at \$5,000 to grade 5 miles State road.

**Phoenix, Ariz.**—By Supervisors of Pima County, contract for 5 miles of state highway from Santa Rita Mountains toward Vail to Roberts & Johnson, Tucson, at \$14,577.

**Coronado, Cal.**—For improving streets west of Orange Ave., from First St. to Alameda Ave., to H. G. Fenlon, 855 Fifth St., San Diego, at \$317,811.

**Pasadena, Cal.**—Less than \$200 separated lowest bidders for work of paving Lake Ave. from Colorado to Orange Grove Ave., Andrew Holloway being given job by Comm. upon recommendation of Comr. Allin. Holloway's bid was \$23,611.80, and bid of the O. & C. Constr. Co. was \$23,807.80. The other bids were \$24,143.60 from the Barber Asphalt Co. and \$29,282.40 from George R. Curtis. Paving job amounts to 131,600 sq. ft. and there is a little over 1,000 ft. of new curbing to be put in. For northern part of Lake Ave. job, from Orange Grove to Washington, which is to be paved with 7-in. oil-macadam, the lower part is to be paved under Warren Brothers' patent, goes to H. E. Cox, who is very much lowest bidder. His bid was \$11,480. Other bids were: W. A. Dontanville, \$15,680; George R. Curtis, \$13,104; George Wiegand, \$12,992. In northern portion of the job there are 112,000 sq. ft. of paving.

**Connecticut.**—By State Highway Comr. Chas. J. Bennett, at Hartford, as follows: Avon, Simsbury and Canton—A continuous stretch of highway about 11.460 lin. ft. native stone macadam construction to Leonardo Suzio, Meriden, at \$19,000. Windham—About 3,445 lin. ft. gravel concrete construction to Bristow Bros. & Knowles Corp., Narragansett Pier, R. I., \$2,500.

**Chicago, Ill.**—To Great Lakes Dredge & Dock Co., for paving slope of North Shore Channel, at \$49,750.

**Ottawa, Ill.**—By Board of Local Improvements, contract to James Sackley Co., 307 Chamber of Commerce Bldg., Chicago, Ill., at \$269,811, for paving in West Ottawa District.

**Ottawa, Ill.**—For paving with brick 60,966 sq. yds. to John Cherry, Jacksonville, at \$1.84 per sq. yd. To James A. Sackley Co., Chicago, Ill., for brick paving, 123,782 sq. yds. at \$1.80 per sq. yd.,

and for brick paving 2,875 sq. yds. to Jos. Leix at \$1.55 per sq. yd. Excavation included in bid. G. L. Farnsworth.

**Ottawa, Ill.**—To John Cherry, Jacksonville, Ill., for resetting 5,610 lin. ft. of sandstone curbing at \$0.204 per lin. ft. and 41,406 lin. ft. of new concrete curbing at \$0.554; also to James A. Sackley Co., 307 Ch. of Commerce, Chicago, Ill., for resetting 11,180 lin. ft. sandstone curbing at \$0.184 and for \$73,636 lin. ft. new concrete curbing at \$0.554.

**Fort Wayne, Ind.**—By County Commissioners, contracts for two stone roads in Monroe township. Dean Ellison was lowest bidder on both and was awarded both contracts. He will stone Webster road for \$4,223, and the Gilbert road for \$12,579. Estimate on first was \$5,268.47, and on second, \$14,571.60.

**Ashland, Ky.**—By City, to Means-Russell Iron Co., at \$3,232.45, to improve Winchester Ave. from end of present paving to lower city limits.

**Columbia, La.**—By Highway Dept., State Board of Engineers, New Orleans, to B. D. Wood, 137 Carondelet St., New Orleans, for Rayville Highway 4 miles in Caldwell Parish, at \$20,222. Other bidders: F. C. Barbour, Shreveport, \$22,755; Thos. Larkin, Sherman, Tex., \$23,092; Nicholson & Jones, Lake Providence, La., \$23,242; Healy Constr. Co., Meridian, Miss., \$27,573.

**Cambridge, Md.**—By State Road Commissioners, Garrett Bldg., Baltimore Md., for construction of 3 3/4 miles of state aid road in Dorchester County, to Thos. C. Forsythe, 909 Munsey Bldg., Baltimore, at \$51,213.

**Upper Marlboro, Md.**—By State Road Commissioners, Baltimore, contract for construction of 2.03 miles of road in Prince George's County, to Harper & Voight Co., 717 14th St., N. W. Washington, D. C., at \$31,138.

**International Falls, Minn.**—By Commissioners of Koochiching County, contract to Northwestern Construction Co., Spooner, Minn., for constructing two state rural highways, as follows: Road No. 20, \$22,257, and Road 24, \$106,079.

**Kansas City, Mo.**—For constructing first and second sections of Sul-a-bar Road, by County Court, to Davidson Bros., at \$21,580.

**Madison, Mo.**—For paving with concrete block on Seventh St. by Board Local Improvements, to E. W. Hilker, at \$15,000.

**Hamilton, Mont.**—By Commissioners of Ravalli County contract to Clifton-Annaplegate Co., Spokane, Wash., at \$30,000 for construction of 40,000 ft. of wagon road. Other bidders were Lord Construction Co., Hamilton, Mont., \$33,750, and Peter Ivanoff, Hamilton, Mont., \$36,460.

**Brooklyn, N. Y.**—The city has received following low bids for paving various streets and roads in Borough of Brooklyn. For paving with permanent asphalt pavement on a 6-in. concrete foundation, Bay Ridge Ave., from 14th to 15th Ave., the Borough Asphalt Co., 1301 Metropolitan Ave., \$4,604; for paving Union St., from Bedford Ave. to Rogers Ave., the Borough Asphalt Co., \$3,849; for paving Vanderveer Place, from Flatbush Ave. to East 23d St., Borough Asphalt Co., \$2,633; for paving 24th Ave., from Stillwell Ave. to 86th St., Louis Granato, 822 Bergen Ct., \$8,480; for paving 54th St., from 13th Ave. to 15th Ave., Borough Asphalt Co., \$7,904; for paving 46th St., from 13th to 18th Ave., Borough Asphalt Co., \$22,372. Bids were received Nov. 26. Contract for paving with asphalt blocks on concrete foundation portion of Skillman Place and Hunter Ave., Borough of Queens, has been awarded to Hastings Pavement Co., 25 Broad St., New York, at \$1.80 per sq. yd. for pavement and \$6 a cu. yd. for concrete.

**New York, N. Y.**—Contracts have been awarded by President of Borough of Bronx as follows: for completing the contract abandoned by John J. Farrell Contracting Co., for repaving with redressed granite blocks on a concrete foundation, Tremont Ave., from Webster to Third Ave., and setting curb to S. S. Davis, at \$18,388; for regulating, grading, setting curbstones, flagging sidewalks, laying crosswalks, building approaches and erecting fences in Frisby Ave., from Walker to Zerera Ave., Burnside Contracting Co., 270 Burnside Ave., Bronx; for regulating, grading, setting curbstones, flagging sidewalks, laying crosswalks, building approaches and erecting fences, in West 234th St., from Kingsbridge Ave. to Tibbett Ave., Burnside Contracting Co., at \$6,690; all bids rejected for regulating, grading and re-grading, setting and resetting curbstones, flagging and reflagging sidewalks, laying and relaying crosswalks,

building approaches and erecting fences in Fordham Road, from Harlem River

**Marion, O.**—By Director of Public Service contract for paving Jefferson, Hill and Orchard Sts., to the Toledo Asphalt Block Co., of Toledo, at \$8,891, \$3,018 and \$4,368, respectively.

**Ashland, Ore.**—For grading 13 miles of Pacific Highway over Siskiyou Mts. to Kessel & McDowell, Tacoma, Wash., at \$107,534.

**Jacksonville, Ore.**—To Keasal-McDowell Logging Co., of Tacoma, Wash., for grading, culverts, etc., Siskiyou Section Pacific Highway, Jackson County, 1 1/2 miles, \$107,540. Road 24 ft. wide; maximum grade, 6 per cent. H. L. Bowlby is State Highway Engr., Salem.

**Connellsville, Pa.**—Contract has been awarded to Duggan & Miller for paving Race St., between Green St. and Davidson Ave. The price is to be \$13,250.

**Wilkes-Barre, Pa.**—Paving work calling for expenditure of \$11,000 will be done as last work of present street committee of councils if report of committee is approved at meeting of councils. The street committee has awarded contracts for paving and curbing of South Sherman St., between South and Northampton St., to John E. James of Wilkes-Barre. The pavement is to be of brick. Warner-Quinlan Co. received contract for paving of Shovlin St. and Grover and Folsom lanes with asphalt. The company was the only bidder for this work. No action was taken on the matter of resurfacing North River St. from North St. to Courtright Ave., and the paving of Sheldon St., West Ross St. and Riverside Drive. The Trinidad Asphalt Co. bid on this work. Paving bids were as follows: Sherman St.—3,186 sq. yds., John E. James, C. C. M. brick, \$2.18; Scranton, \$2.17; C. C. W., \$2.21; Porter, \$2.29; S. B. B. & T., \$2.20; Grafton, \$2.25; Bessemer, \$2.28; Metrolin, \$2.33; Curbing, 80 and 75 cts. a foot. Grover and Folsom Lanes—1,150 sq. yds., Warner-Quinlan Co., \$2 a sq. yd. for asphalt, 80 cts. for curb. John E. James' proposal for brick was about 5 cts. higher than the bid on Sherman St. Shovlin St.—1,278 sq. yds., Warner-Quinlan Co., \$2 for asphalt and 80 cts. for curb; John E. James, same as on Sherman St. Sheldon, Riverside Drive and West Ross St.—2,777 sq. yds., Warner-Quinlan Co., \$2 for asphalt and 80 cts. for curb; Trinidad Asphalt Co., \$1.94 for asphalt and 72 cts. for curb; Herick Construction Co., C. C. W. brick \$2.30, Mack \$2.25, Porter \$2.22, Grafton \$2.27, Bessemer \$2.31, Metrolin \$2.25; curbing, 83 cts., 98 cts., and 65 cts. North River—7,622 sq. yds. resurfaced, Warner-Quinlan Co., \$1.25; Trinidad Co., \$1.21.

**Fort Worth, Tex.**—Contract for paving West Seventh St. viaduct was let to Tarrant Construction Co. by County Commissioners' Court, and under contract must be completed within 35 days. Material to be used is 4-in. standard Coffeyville brick, laid on edge, and the price is \$1.45 per sq. yd.

**Hearne, Tex.**—By Commissioners of Robertson County, contract to Cobb & Gregory, Dallas, at \$150,000, for constructing 40 miles of highway.

**Houston, Tex.**—By City, to J. J. Bland at \$10,577.50 to pave portions of Sabine and Shearn Sts., with gravel. E. E. Sands is City Engr.

**Temple, Tex.**—By City, to W. T. Montgomery, to construct 1 mile gravel pike from western city limits, leading to public square.

**Burlington, Wash.**—To Cascade Construction Co., Mutual Life Bldg., Seattle, contract for paving of Carl St., at \$10,374 and of Oak St., at \$5,993.

**Seattle, Wash.**—For grading, paving Fifth Ave. South to L. R. Ellis at \$69,333.05, and to D. J. McLean at \$1,197 for grading Menning St.

**Seattle, Wash.**—For resurfacing Whitman Ave. to De Flong & Anderson, at \$19,464.82.

**Spokane, Wash.**—Contracts have been let on four public improvement projects by City Council, jobs in all cases but one going to lowest bidder. Contract for sidewalking of Broad Ave., Magnolia to Lidgerwood St., was let to Mitchell Bros., at their bid price of \$6,400. C. M. Payne bid \$6,289 on same job, but work was awarded to Mitchell Bros., because they had the other contract on the same avenue. Contract for grading and curbing of Broad Ave., Lidgerwood to Magnolia St., was let to Mitchell Bros. at \$6,898. Contract for the grading and ballasting of Trent Ave. from the West Olive Ave. bridge to vacated Grant St., was let to J. B. Mitchell for \$1,500. Contract for curbing of Jackson Ave., Monroe to Cedar, was let to A. D. & F. B. Robinson at \$1,094.

**South Vancouver, B. C.**—For paving with creosoted wood block Main St., by City Council, to Dominion Creosoting Co., at \$438,494.

## SEWERAGE

**Long Beach, Cal.**—Bids will be received by City Clerk of city of Long Beach until 7.30 o'clock p. m., of Tuesday, Dec. 16, 1913, to purchase outfall sewer bonds, Series No. 2, of city of Long Beach, in amount of \$340,000. Harry B. Riley is City Clerk.

**Richmond, Cal.**—City Council has accepted plans prepared by City Engineer Chapman for \$150,000 worth of sewer improvement in Pullman section of city. Bonds have already been voted for large amount of work.

**Stockton, Cal.**—City Engr. has nearly completed plans for installation of rain-water sewers to be established in Yosemite Terrace. As soon as plans are completed and accepted by city, work will be started on construction of system, which will be rushed to completion.

**Manatee, Fla.**—Citizens have voted in favor of \$20,000 bond issue for sewers.

**Chicago Heights, Ill.**—Bids are being received by Board of Local Improvements for construction of East Side Storm Water Sewer system. Estimated cost, \$163,260.12. M. H. McCoy is Engineer.

**Freeport, Ill.**—Extensive sanitary sewer system is to be built in south part of city.

**Atchison, Kan.**—Bids are being received by City Clerk for construction of sewers. F. S. Altman is City Engr.

**Plaquemine, La.**—Question of new sewer plant is being discussed.

**Baltimore, Md.**—Bids have been opened for \$1,800,000 of 4 per cent. sewerage stock of city of Baltimore, due in 1961. Total number of bids submitted was six times amount offered, and they ranged from 90 to 94.83. Issue was awarded to syndicate headed by Estabrook & Co. and Blodgett & Co., at 94.83.

**New Bedford, Mass.**—Committee on roads, bridges and sewers has recommended sewer in Cedar Grove St., between Myrtle and Summer Sts., and order for \$1,100 to build sewer has been adopted by aldermen.

**Pittsfield, Mass.**—Order has been adopted appropriating \$25,000 for new sewer work.

**Flint, Mich.**—With only one bid presented for construction of sanitary sewers on East St., from Kearsley St. to Court St. and on Kearsley St., from Harrison to Clifford, Common Council has voted to do work by day labor under supervision of city engineer.

**St. Paul, Minn.**—Bids will shortly be received by City Council for construction of sewer system in Second Ward, to cost \$30,000. Oscar Claussen is City Engineer.

**Springfield, Mo.**—City Council has rejected all bids received for construction of sewer in First Ward. New bids will be asked. Estimated cost, \$12,000.

**Big Timber, Mont.**—Construction of new sewer system is being considered.

**Hoboken, N. J.**—Resolution is being considered providing for early construction of Eleventh St. sewer.

**Irrington, N. J.**—Ordinance providing for construction of South Side storm sewer in Irrington at cost estimated at from \$150,000 to \$200,000 has been passed on first reading at meeting of Town Council. Section to be cared for by flume embraces territory now drained by streams designated as Skinkle Brook and Ditch, in Second and Third Wards.

**Perth Amboy, N. J.**—Ordinances authorizing construction of various sewers have been passed.

**Red Bank, N. J.**—Ordinance to sewer Bridge Ave., between Monmouth and Oakland Sts., preparatory to paving that street has been passed on first reading.

**Albany, N. Y.**—Council has passed ordinance authorizing bond issue of \$120,000 for extending sewers in basin, building basin intercepting sewer, dock walls along city property and other work along basin in connection with river front improvement.

**Dunkirk, N. Y.**—Construction of sewer in Newton St. has been ordered.

**Elmira, N. Y.**—F. H. Shaw will prepare plans, specifications and estimates for sewage disposal plant.

**Fredonia, N. Y.**—Eugene H. Porter, State Commissioner of Health, has granted Fredonia trustees permission to build extension of sewer in Orchard St. and also has directed that detailed plans for building of sewage disposal plant be filed with board by January 1, 1914.

**Wappingers Falls, N. Y.**—Engineer Sterling of Newburg is making survey of some of streets and getting necessary information for plans for sewer and water system. Plans will shortly be completed.

**Akron, O.**—Ordinances have been adopted for construction of various sewers.

**Dayton, O.**—City Council has issued bonds in sum of \$83,500. Of this amount \$31,500 was for purpose of completing work that had already been started, remainder being for construction of storm water sewers along number of streets and to pay city's portion of cost of paving certain thoroughfares that are now in a deplorable condition. Storm water sewers will be constructed on the Keowe St. addition, Eaton Ave., Fairview Ave., Fritz Ave., Salem Ave., Virginia Ave., Second St., Harshman St., Folkert St., Gayer St., Princeton Drive, Howard St. and Euclid Ave. These improvements will entail an expense of \$38,500.

**Urbana, O.**—Ordinance has been passed for construction of sewer in Drury Lane.

**Allentown, Pa.**—Establishment of house sewer system is advocated.

**Pittsburgh, Pa.**—City Council has approved emergency contract made by Department of Public Works with John F. Casey Co. for repair of broken 33d St. sewer.

**Reading, Penn.**—Plans have been prepared for construction of sewer system at county jail to cost \$30,000.

**Scranton, Pa.**—Indications are that the present city administration will take unto itself work of letting contracts for two monster relief sewer systems which were provided for in recent big bond issue. Director Terwilliger of department of public works stated that he expects to advertise for bids for two big jobs within next few days and hopes to have everything ready so that contracts can be let before end of year. The two big jobs include Pine Brook sewer which will cost in the neighborhood of \$79,500, and the Linden St. system which will cost approximately \$73,500.

**Providence, R. I.**—Resolution has been passed directing City Solicitor to apply for legislation authorizing city to hire \$500,000 for construction of sewers.

**Houston, Tex.**—An expenditure of \$571,840 is contemplated by city of Houston in laying a very general storm sewerage system throughout city. This appropriation is divided among six wards, in amounts ranging from \$10,000 to \$143,000 per ward. Work is now under way and when sewers are laid streets through which they are laid will be paved. Twenty miles of paving will be laid immediately.

**San Antonio, Tex.**—Large number of bonds have been issued for sewer improvements. (See misc.)

**Wharton, Tex.**—Sewerage improvements have been authorized.

**Puyallup, Wash.**—Two storm sewer improvements calling for bond issue of \$3,716, and cement sidewalk improvement district on which no estimate was made have been decided on by council. Largest improvement district, which calls for 24-in. cement storm sewers, is on 7th Ave. and on Meridian St., between 2d St. and 4th, and will cost \$2,141.

**Seattle, Wash.**—Engineer has estimated cost of sewers on Swift Ave., at \$17,500.

**Seattle, Wash.**—Following are bids received for sewers: Dravus St. sewers: H. Young, \$4,092.50; Ferris Crum, \$3,414.90; Frank Johnson, \$3,346.90; V. Romaglia, \$3,884.50; Hans Pederson, \$3,310.30. Fifth Avenue sewers: James R. Kelly, pipe sewer \$1,576.70, cement pipe \$1,576.70; Nelson & Carlson, pipe \$2,492.25, cement \$2,563; Hans Pederson, pipe \$1,535.40, cement \$1,507.10; G. J. Dahl, pipe \$1,672.40, cement \$1,672.40; H. Young, pipe \$1,978.45, cement \$1,936; Ferris Crum, pipe \$2,099.55, cement \$2,184.45; Haydon & Sons, pipe \$1,664.70, cement \$1,673.

## CONTRACTS AWARDED.

**New Decatur, Ala.**—For construction of a storm sewer in Fourth Ave. to W. N. Leftwich & Co., Nashville, Tenn., at \$5,643.

**Pasadena, Cal.**—For construction of sewer on Union St. and Worcester Ave. to Theo. L. Syvertson at \$1.25 per lin. ft.

**West Hartford, Conn.**—By Board of Sewer Commissioners, for construction of sewers in (a) Section 5, (b) Section 6, (c) Section 7, as follows: Pierson Engineering & Construction Co., Bristol, (b) \$55,311; William H. & Frank B. O'Neill, Hartford, (a) \$45,461; Petrossi Bros., Hartford (c) \$28,118.

**Dixon, Ill.**—By Bd. of Local Impts., contract for furnishing of all material, tools, machinery and labor for construction of vitrified tile pipe sewer for combined storm water and sanitary purposes, with connection laterals, for storm water and house connection laterals, 1 ft. inside curb line on North Galena Ave. from 100 ft. south of McKinney St. to 20 ft. south of Illinois Central R. R. track, to Charles E. Hughes of Rockford, Ill., at following bid: 350 lin. ft. of 10-in. sewer, complete, at 79c. per lin. ft.; 176 lin. ft. of 6-in. sewer, complete, at 35c. per lin. ft.; 84 lin. ft. of 10-in. storm-water sewer, with traps, at 79c. per lin. ft.; 2 manholes at \$39 each. Same bidder was awarded following contracts also: Sewer on East Chamberlain St. at following bid: 630 lin. ft. of 8-in. sewer, complete, at 59c. per lin. ft.; 350 lin. ft. of 6-in. sewer, complete, at 35c. per lin. ft.; 1 manhole, 3-ft. inside, with cast iron cover, complete, \$32; 1 lamphole complete at \$62. On East Sixth St. at following bid: 1,100 lin. ft. of 15-in. sewer, complete, at \$1 per lin. ft.; 740 lin. ft. of 10-in. sewer, complete, at 79c. per lin. ft.; 792 lin. ft. of 6-in. sewer, complete, at 35c. per lin. ft.; 22 lin. ft. storm water sewer with traps at 79c. per lin. ft.; 6 manholes at \$39.25 each; 1 cement concrete header at inlet at \$2.25.

**Waterloo, Ia.**—For construction of sewers, to Dearborn Construction Co., Waterloo, at \$9,765.

**Salina, Kan.**—To Otto Peterson of Salina, contract for extension of Ash St. sewer at total cost of \$13,160 for monolithic concrete. Other bids as follows: Salina Plumbing Co., \$15,500; D. G. Stack, Salina, \$17,916; The O'Neil Constr. Co., of Leavenworth, not bidding on this particular kind; Everett & Burke, \$25,110.

**Baltimore, Md.**—By City, contract No. 119, to Gallagher, Boyle & Bryan, 2032 Aliceanna St., at \$176,154.75, which includes 53,000 lin. ft. vitrified pipe sewer, 8 to 24 in. diam., and 35,000 lin. ft. vitrified pipe house connections.

**Hastings, Neb.**—E. R. Bing's bid for construction work in sewer district No. 68, comprising large territory in southwest part of Hastings, has been accepted by Council. All of proposals were based on use of combined flush tank and manhole at end of laterals, as proposed by City Engr. Fuller. The bids were: E. R. Bing, Hastings, \$4,148; C. J. Burke & Son, Kearney, \$4,400; A. A. Dobson Co., Lincoln, \$4,470; A. J. Van Every, Hastings, \$4,586; Clarence Young, Hastings, \$4,605.

**Belleville, N. J.**—By Town Council contract for construction of sewers in Greylock Manor Section to P. & J. Jannerone, Belleville, at \$38,000.

**Haddonfield, N. J.**—For construction of storm sewers to Cantrell Construction Co., Real Estate Trust Bldg., Philadelphia, \$9,107. Other bidders as follows: Kelley-McFeeley Co., \$9,442; Bell Bros., \$9,689; McGovern Contracting Co., \$10,099; Suburban Contracting Co., \$10,436.

**Haddonfield, N. J.**—For constructing storm sewers to Cantrell Contr. Co., Real Estate Bldg., Philadelphia, at \$9,107.

**Linden, N. J.**—On recommendation of Sewer Committee, contract for sewerage Clinton St. and Stimson Ave. has been awarded to Villa Bros. Construction Co., Westfield, N. J., at meeting of Township Committee. Bid of company is \$1,467.05.

**Marion, O.**—By Bd. of Pub. Service to Thos. F. Hurley, for constructing sewers on Oak and Proctor Sts., at \$7,498 and \$9,340 respectively.

**Holmesberg, Pa.**—For completion of sewer system for Home for Indigent at Holmesberg, to the Cantrell Construction Co., Real Estate Trust Bldg., Philadelphia, at \$17,633.

**Pittsburgh, Pa.**—Council has approved emergency contract made by department of public works with John F. Casey Co., of Pittsburgh, for repair of 33d St. sewer which was wrecked by explosion of gas. Contract calls for payment to Casey Co. actual cost of labor and materials with 15 per cent. added to pay insurance on employees of Casey Co. City is also to pay contractor for machinery used on work. These temporary repairs will cost about \$50,000.

**South Bethlehem, Pa.**—Bids for construction of house sewer on 2d St. have been received and contract awarded to E. H. Neumeyer.

**Sioux Falls, S. D.**—Bids for construction of lateral sewers on following streets have been received as follows: Minnesota Ave. from 11th St. to 12th St., Fanebust Bros., \$337.70; Minnesota Ave. from Fifth St. to Eighth St., Fanebust Bros., \$1,017.85; Dakota Ave. from Omaha Rv. to 14th St., Fanebust Bros., \$596.50. Bids have been referred to Comr. Gates and City Engr. Howe with power to act.



Contract for construction of lateral sewer on Euclid Ave. from Omaha Ry. track to Tenth St., has been awarded to Fanebust Bros. on their bid of \$474.50.

**Houston, Tex.**—By City, to Horton & Horton, Houston, at \$28,898.25 to extend Austin St. storm sewer from Elgin to Eagle St., with laterals on Isabella St.; to Davis Bros., at \$11,463.12 to construct storm sewer on Fletcher and Hogan Sts., with laterals on Montgomery Ave. E. E. Sands is City Engr.

**Waco, Tex.**—For construction of sewer in Washington, Austin and Franklin Sts., to connect with Mary St. sewer, to Ockander Bros., Waco, at \$11,290.

**Waco, Tex.**—Lowest bid received by City Comm. for installation of storm sewer laterals and catch basins in downtown district has been submitted by Ockander Bros., Amerillo, Tex., at \$10,880.

**Seattle, Wash.**—For construction of sewers in North and West 49th Sts. to Atlas Constr. Co. at \$8,236.50, and on West Seattle St., to Colosuido & Co. at \$10,767.15.

**Seattle, Wash.**—Lowest bidder for construction of sewers in West Atlantic St. was the Atlas Constr. Co. at \$23,589.90. Other bidders as follows: Dicken & Rightmire, \$26,081.20; V. Ramaglia, \$25,737.80; J. B. Snyder, \$31,366.99; Hans Pederson, \$24,034.80; Geo. W. Walker, \$25,664.0; H. Young, \$24,400.15; N. Florito & Bros., \$24,988.45.

## WATER SUPPLY

**Fort Smith, Ark.**—Bonds in sum of \$70,000 have been voted by the Van Buren Water Co. for extensive improvements.

**Davis, Cal.**—Davis Water Co. has ordered pipe for its 6-inch mains. One pipe line will be laid out to University State Farm.

**Eureka, Cal.**—City of Eureka has asked Railroad Comm. to fix valuation upon water system of Eureka Water Co., for reason that Eureka contemplates acquiring this water system by eminent domain.

**Wilmington, Del.**—City Council is considering issue of \$50,000 for installation of meters in city.

**Manatee, Fla.**—Citizens have voted in favor of \$20,000 bond issue for water works.

**Roanoke, Ill.**—Citizens are said to have voted to issue \$10,000 bonds for construction of water works.

**Goodland, Ind.**—Citizens have voted for construction of water works.

**Lawrence, Kan.**—Citizens will vote on purchase of property of Lawrence Water Co. for sum of \$150,000.

**Plaquemine, La.**—Question of new water works system is being discussed.

**Lynn, Mass.**—Bids for completion of Breed's Pond dam by raising it to its final height of 110 ft. and building of dam at Lantern Rock have been opened at meeting of council. There were 11 bidders, including many prominent contractors of Boston and vicinity, and some from New York. T. Stuart Sons Co., of Newton, Mass., and H. B. Sproul Contracting Co., of Peekskill, N. Y., were low on majority of phases of the contract. Bids were based on: Earth embankment, 155,000 cu. yds.; slope paving, 10,225 sq. yds.; concrete core wall, 9,875 cu. yds.; stripping base, 4,450 cu. yds.; trench excavation, 6,000 cu. yds.; rock excavation, 3,025 cu. yds. Bids were as follows: T. Stewart Sons Co., Newton, earth embankment, .65; slope paving, \$1.65; concrete core wall, \$6.25; stripping base, \$.65; trench excavation, \$1.50; rock excavation, \$.3. H. B. Sproul Contracting Co., Peekskill, N. Y., embankment, \$.80; paving, \$1.75; core wall, \$4.50; stripping, \$.60; trench excavation, \$.75; rock excavation, \$.3. Russo Parker Construction Co., Boston, embankment, \$.84; paving, \$1.90; core wall, \$5.75; stripping, \$.1; trench, \$1.50; rock, \$.3. Coleman Bros., Chelsea, embankment, \$.80; paving, \$1.50; core wall, \$.65; stripping base, .60; trench, \$.2; rock, \$.3. Daniel F. Crowley, Bristol, Conn., embankment, \$.60; paving, \$1.60; core wall, \$.58; stripping, \$.1; trench, \$1.50; rock, \$.4. A. G. Tomassello, Boston, embankment, \$.80; paving, \$1.75; core wall, \$.7; stripping, \$.60; trench, \$1.50; rock, \$.4. Holbrook, Cabot & Rollins Corp., Boston, embankment, \$1.20; paving, \$1.25; core wall, \$.735; stripping, \$.75; trench, \$1.50; rock, \$.3. Michael Russo & Son, Boston, embankment, \$.92; paving, \$.265; core wall, \$.7; stripping base, \$.40; trench, \$.1; rock, \$.3. David J. Sheehan Co., Lynn, embankment, \$.1; paving, \$.250; core wall, \$.650; stripping, \$.1; trench, \$.2; rock, \$.6. Long & Little, Leominster, embankment, \$.90;

paving, \$.250; core wall, \$.635; stripping, \$.60; trench, \$1.50; rock, \$.325. Bids have been referred to Water Commissioner for tabulation and recommendation.

**Pittsfield, Mass.**—Order has been adopted appreciating \$25,000 for water extensions.

**Vicksburg, Miss.**—The United States Supreme Court has decided that city of Vicksburg, Miss., has right to sell bonds at present for purpose of erecting at once municipal system of water works for use after November, 1916, when present franchise of Vicksburg Water Works Co. expires.

**Humboldt, Neb.**—Construction of adequate water system for business section of city is being planned.

**Rahway, N. J.**—Extension of water mains is being considered.

**Wappingers Falls, N. Y.**—Engineer Sterling of Newburg is making plans for water and sewer system.

**Wellsville, N. Y.**—Municipal ownership of waterworks and change of source of supply is strongly advocated. Water company has offered to sell plant and mains to town for \$90,000.

**Wilmington, N. C.**—Prof. E. B. Phelps, of U. S. Hygienic Laboratory, Washington, has begun his investigation of Wilmington public water supply, at request of City Council. He is to make report of feasibility of plan to obtain water supply from deep wells.

**Akron, O.**—Ordinance has been passed to issue bonds in sum of \$1,250,000 for purpose of extending, enlarging, improving, repairing and secure more complete enjoyment of water works of city of Akron, O., and for purpose of supplying water to said city and the inhabitants thereof. G. C. Jackson is President of Council.

**Youngstown, O.**—Resolution has been adopted to appropriate property for purpose of establishing reservoir in Milton Basin to supply water to city of Youngstown.

**Youngstown, O.**—Ordinance has been passed to issue bonds for erecting, extending, improving, furnishing, equipping and securing a more complete enjoyment of water works of city of Youngstown and for supplying water to corporation and inhabitants thereof by construction and equipment of pumping station.

**Coatesville, Pa.**—Installation of water supply has been authorized.

**Copperhill, Tenn.**—Installation of water supply has been voted for. Council has accepted offer of Tennessee Copper Co., deciding to run main water line through center of town, 1,000 ft. of hose on either side. Engineer will be employed at once.

**Erwin, Tenn.**—Question of bond issue to purchase water system is now being agitated. Election will be held in near future to settle this matter.

**Fort Worth, Tex.**—Bids for purchase of new boiler feed pump for water plant at Powell field have been opened by City Comm. and all were referred to Water Comm. Blanke with power to act. Bids were for turbine pumps, as follows: Texas Mfg. Co. of Fort Worth, \$950.60 for four-stage centrifugal pump; \$1,287 for Curtiss steam turbine. A. M. Lockett & Co., of Dallas, \$1,135. The Axtell Co., Fort Worth, \$701.95. Smith & Whitney, Dallas, \$920.

**Wheeling, W. Va.**—Bd. of Control will employ hydraulic engineers to work in connection with City Engr. C. C. Cooke to go over conditions of Wheeling and determine which would be best water system for city. There have been \$1,800 appropriated by Council for this investigation.

**Seattle, Wash.**—Following are bids received for water mains in 29th Ave.: V. Romaglia, \$3,981.14; Will Koota, \$3,933.30; N. Florito & Bro., \$3,727.10; Bertram Jessen, \$3,906.13; Wenzler & Ward, \$3,959.35; Dicken & Rightmire, \$4,123.38; J. Walls & Co., \$3,805.56; T. Ryan & Co., \$4,019.95; D. H. Traphagen, \$4,210.42.

**Niagara Falls, Ont., Can.**—Stamford Council has opened bids on supply of pipe, hydrants and pumps for proposed new water works, and completed preliminary arrangements for starting of work early in spring. Bids were much lower than expected, but no contracts were awarded. Engineer Carl Gardner will examine bids and report with recommendations at special meeting to be held on December 12th.

**Mimico, Ont.**—Village Council is said to be considering issue of \$75,000 bonds for water works and sewer system.

## CONTRACTS AWARDED.

**Riverside, Cal.**—For improvements to water works system as follows: Contract No. 2—Furnish and lay approximately 17,450 ft. 30-in. reinforced concrete pipe to Arthur S. Bent Constr. Co., Los Angeles, \$44,000. Contract No. 4—Reservoirs and dams: Earl F. Low Co., Byrne Bldg., Los Angeles, \$38,975. Other bids as follows: A. S. Bent Constr. Co., \$40,500; Putnam-Stone Constr. Co., Pasadena, \$41,618; F. A. Benchley, Fullerton, \$45,229; Paul H. Ehlers, Los Angeles, \$46,000; Cresmer Mfg. Co., Riverside, \$47,997; Fred Peters, Riverside, \$49,200.

**Silver Creek, Neb.**—For construction of water system and electric light plant, to Alamo Engine & Supply Co., Omaha, Neb., at \$7,880.

**Perth Amboy, N. J.**—Contract for erection of a 400-horse power steam water tube boiler at city's waterworks at Runyon has been awarded to Heine Safety Boiler Co. of New York, by Bd. of Water Comrs. Bid was \$4,095.

**Cherryville, N. C.**—By City, to B. F. Roberts, 105 N. McDowell St., Raleigh, N. C., to construct waterworks at \$18,496, including laying of 5 miles of water mains, constructing of 100,000-gallon reinforced concrete reservoir and pump house and installing 500-gallon turbine electric pump. Adlai Osborne is Engr., Charlotte, N. C.

**East View, O.**—For construction of 8-in. water main in East View Ave., to Lanese Co., Columbus Bldg., Cleveland, at \$8,337.

**Youngstown, O.**—Contract has been awarded to Louis Adavasio for building of Milton reservoir dam.

**Fort Worth, Tex.**—Contract for installing boiler feed pump at Powell station of water works has been given to Axtell Co. on its bid of \$701.95.

**Willis, Tex.**—By city, to Lane & Bowler Co., Houston, to drill artesian well, also to erect 108-ft. water tank and tower to have capacity 50,000 gals. S. N. Beard is Mayor.

**Hilliard, Wash.**—To Kennedy Constr. Co., for laying of metal main throughout the city at bid of \$88,000.

**Seattle, Wash.**—For laying water mains on 20th Ave. N. E., to Will Koota at \$8,584.40.

**Victoria, B. C.**—For construction of reinforced concrete flow line 42-in. diam., for Sooke Lake water system to Pacific Lock Joint Pipe Co., Globe Block, Seattle, Wash. C. H. Rust is Water Comr.

**Salmon Arm, B. C.**—For installation of water works by City Council to Municipal Constr. Co., of Vancouver at about \$135,000.

**Toronto, Ont.**—By Municipal Council to Roger Miller & Sons, of Toronto, for supplying and laying 84-in. steel conduit from the Pure Water Reservoir on Toronto Island to South Tunnel Shaft, including all valves and special connections at \$540,000.

## LIGHTING AND POWER

**Dothan, Ala.**—Construction of municipally owned gas plant is under consideration.

**Phoenix, Ariz.**—Street lighting bonds in sum of \$25,000 have been approved.

**Bridgeport, Conn.**—Mayor recommends installation of "white way" in business section.

**Hartford, Conn.**—Board of Contract & Supply has voted to receive bids until 11 a. m., Dec. 16, for erecting 141 double light posts and 113 single light posts, and for furnishing all fixtures and lighting by either gas or electricity for term of years ending June 1, 1919. Plans may be seen and specifications obtained at office of street commissioners, of which Joseph Butts is president.

**Springfield, Ill.**—Plan is being considered for improvement of old power plant.

**Indianapolis, Ind.**—Bd. of Pub. Wks. has ordered the Indianapolis Light & Heat Co. to install street arc lights at various points.

**Kendallville, Ind.**—East Mitchell and Rush Sts. are to be improved by ornamental boulevard lighting system. City Council passing resolution to that effect. Thirty-eight lights will be placed on Mitchell St., between State and East Sts., and will cost, according to estimate of Supt. Shauck, \$27 each, and there will be 15 on Rush St., between State St. and the G. R. & I. tracks. The whole improvement to cost \$4,133.84.

**Atchison, Kan.**—New contract will be considered for installation of "white way" on Commercial St.

**Cambridge, Mass.**—Cambridge Electric Light Co. will purchase within next month 109 ornamental poles and inverted tungsten lamps to be erected on Massachusetts Ave. W. E. Holmes is treasurer and general manager.

**Lawrence, Mass.**—Installation of municipal lighting plant in Arlington district is being discussed.

**Grenada, Miss.**—Manager of municipal electric light plant will purchase within a few months 20 lamp standards, carrying five-lamp clusters for street lighting. J. W. Lowry is Supt.

**Atlantic City, N. J.**—Plans are being prepared for improvement of present lighting system.

**Paulsboro, N. J.**—Installation of electric light plant is being discussed.

**Perth Amboy, N. J.**—An ornamental white way is desired by some of residents along Market St., between City Hall Park and the Central Railroad tracks, and petition for same has been presented. Tentative plan advanced is to erect ornamental iron lamp posts about 200 ft. apart along both sides of the street, each to have three lights encased in white globes, somewhat similar to those now in City Hall Park.

**Perth Amboy, N. J.**—Installation of new street lighting system on State St. from Smith St. northerly, is under consideration by City Council. It is proposed to use ornamental iron upright posts with brackets to support lamps.

**Spring Lake, N. J.**—Board of Trade recommends to Boro Council artistic lighting system on beach.

**Fulton, N. Y.**—Bd. of Pub. Wks. has voted to advertise in official paper for bids for wiring and lighting 30 posts on Broadway bridge. The Fulton Light, Heat & Power Co. will submit bid on proposition on 10-year basis.

**Syracuse, N. Y.**—Establishment of ornamental lighting system is being planned.

**Tupper Lake, N. Y.**—Electric Light Committee will purchase about Oct. 1, 1914, material for street lighting system, consisting of tub-transformers, rectifiers, lamps, posts, etc.

**Wilson, N. C.**—Bonds have been sold for rebuilding of municipal light and power plant.

**Toledo, O.**—Resolutions have been adopted for electric lighting of various streets.

**Newport News, Va.**—Should action contemplated by Special Street Lighting Co. of City Council be taken, luminous arcs will be placed on Chestnut Ave. and still smaller white way will be added to system of street lighting.

**Suffolk, Va.**—Installation of "great white way" is being discussed.

**Clintonville, Va.**—Common Council has voted to purchase 20-horsepower steam or oil engine for municipal water and electric light plant.

**Puyallup, Wash.**—Report of Light Committee has given new estimate on cost of light and power system. This estimate, compiled by outside engineer, H. O. Bondsfield, of Oakland, Cal., was \$45,000, and is about midway between estimate of Puget Sound Power Co. and that presented by City Commission of Tacoma, latter being lowest.

**Niagara Falls, Ont., Can.**—Decorative street lighting system is being considered by business men.

#### CONTRACTS AWARDED.

**Rochester, Minn.**—To Healy Plumbing & Htg. Co., of St. Paul, by State Board of Control, St. Paul, for furnishing and installing certain piping, valves, etc.; for erecting certain equipment already purchased by State, and for connecting up of certain other equipment installed in places by State. Chas. L. Pillsburg, County Engrs., Metropolitan Life Bldg., Minneapolis.

**New York, N. Y.**—Contract for installing electric wiring, fixtures and gas piping at City Hospital, Blackwell's Island, to Lewis H. Woods, 2355 Jerome Ave., New York, at \$17,893.

**Port Chester, N. Y.**—Contract has been awarded to Westchester Lighting Co.

**Oklahoma City, Okla.**—Board of Land Commissioners has accepted high bids for oil and gas rights on two tracts of Cimarron River bed and one section of school land in Kay County. Two hundred acres of Cimarron, being a northern extension of Cushing field, and 9½ miles southeast of Yale, went to Oscar E. Ford of Helena for 61 per cent. of oil production and 51 per cent. of gas. Another 200-acre tract adjoining it, also being the bed of Cimarron, was awarded to J. C. Elliott, of Pauls Valley, for a straight royalty of 47½ per cent. of both

oil and gas. Former State Auditor Leo Meyers secured school land section five miles southeast of Newkirk for 55 per cent. of the oil and 25 per cent. of the gas with a bonus of 100 in each instance.

**Cumberland, R. I.**—Town Council has voted to accept terms of contract, form of which was submitted for lighting of streets in upper part of town by Woonsocket branch of Blackstone Valley Gas & Electric Co. for a term of 10 years. Agreement calls for furnishing of 27 incandescent electric lights of 60 candle-power, or as many more as may be wanted, to burn all night, for \$27.50 per year, on basis of 10-year contract.

**Seattle, Wash.**—Contract for cluster ball lights has been awarded to H. G. Behneman at \$2,032.16.

**Spokane, Wash.**—For installing ornamental lighting system on Riverside Ave. to Washington Water Power Co., at \$25,500. C. M. Fassett is Commissioner of Public Utilities.

#### FIRE EQUIPMENT

**Montgomery, Ala.**—City Commissioners are discussing purchase of additional equipment for fire department.

**Clarksville, Ark.**—City is now negotiating with city of Hope for combination ladder and hose wagon. This class of apparatus has been abandoned at Hope for motor driven outfits.

**Phoenix, Ariz.**—Fire department bonds in sum of \$75,000 have been approved.

**Antioch, Cal.**—Purchase of hose and other equipment has been authorized.

**Norwalk, Conn.**—City will purchase one motor combination chemical and hose wagon, one chief's auto and 2,500 ft. of 2½-in. hose.

**Wilmington, Del.**—Committee is discussing purchase of motor driven fire apparatus.

**Key West, Fla.**—City is contemplating calling for bids in January for motor fire apparatus. A central station will be erected. Bids will likely call for two tractors for drawing two steam fire engines, one motor driven combination hook and ladder, one triple motor driven pump, hose and ladder equipment. B. E. Warren, Chr. Fire Committee.

**Streator, Ill.**—Purchase of fire motor truck is being considered.

**New Orleans, La.**—Ordinance has been passed directing Commission of Public Finance to advertise for bids for furnishing engine water tower and chemical engine to Fire Department.

**Boston, Mass.**—Fire Commissioner Cole has asked permission to purchase 15 autos for chief officers.

**Holyoke, Mass.**—Following bids have been received for new underground fire alarm cable for city: Gamewell Fire Alarm Co., \$21,555; American Steel & Fire Co., \$22,000; Safety Insulated Wire Co., \$18,250; National India Rubber Co., \$18,941. For station apparatus, Gamewell Fire Alarm Co., \$23,500; Star Electric Co., \$16,875.

**Flint, Mich.**—City Clk. Newcombe has been instructed by Common Council to advertise for bids for 1,000 ft. of 3-in. fire hose.

**Omaha, Neb.**—Purchase of motor triple combination wagon and 5,000 ft. of hose will probably be authorized.

**Coeymans, N. Y.**—Taxpayers have voted to erect new station and to purchase new equipment.

**Elizabeth City, N. C.**—Combination motor fire truck will be purchased. Estimated cost, \$5,500.

**Cleveland, O.**—Director of Public Safety C. W. Stage will ask for a \$100,000 bond issue for erection of a new station.

**Providence, R. I.**—Plans are being considered for purchase of fire boat.

**Westerly, R. I.**—Advisability of installing motor fire apparatus is being considered.

**Chattanooga, Tenn.**—By motion of Comr. Betterton, Comr. of Pub. Utilities, and Comr. of Fire and Police have been appointed committee for purpose of securing plans and specifications for fire hall in Ridgedale. Estimated cost \$15,000.

**Johnson City, Tenn.**—Council will purchase motor apparatus.

**Bellair, W. Va.**—Purchase of new auto fire truck has been petitioned for.

#### CONTRACTS AWARDED.

**San Francisco, Cal.**—Sixteen bids for general construction of engine house No. 48 for Fire Dept. have been received by Bd. of Works, lowest being Newsom, Wold & Kohn's, for \$29,555.

**New Haven, Conn.**—To Manhattan Rubber Co., for \$5,300 ft. of hose.

**Ottawa, Ill.**—To Indiana Motor Truck Co., at \$4,000, for one 6-cylinder, 60-H.P. motor combination chemical and hose wagon, equipped with electric self-starter and electric lights, 40-gallon chemical tank, small ladders, and capable of carrying 1,500 ft. of hose.

**Bowling Green, Ky.**—The Ahren-Fox Fire Engine Co. of Cincinnati, O., has been awarded contract by City Council for furnishing Bowling Green with new motor-driven fire fighting apparatus at cost of \$5,390. It is combination chemical engine and hose carrier and is equipped with booster pumps, which, after chemicals have been exhausted, can be connected with engine and will throw two streams of water three-eighths of an inch diameter at pressure of 200 lbs. It is 6-cylinder engine.

**Red Bank, N. J.**—By Council to American La France Co., Elmira, N. Y., for two 6-cylinder automobile engines.

**Rochester, N. Y.**—By Board of Contract and Supply contract for one tractor drawn steam fire engine to Ahrens-Fox Fire Engine Co. for \$9,000. Board has also awarded contract for one 50-gallon chemical tank to the American-La France Fire Engine Co. for \$424.

**Seattle, Wash.**—For erection of Fire Station No. 33, Rainier Beach, to A. S. Sumarladason at \$7,375.

#### BRIDGES

**Denver, Colo.**—City Atty. I. N. Stevens has approved proofs of Colfax-Larimer viaduct bonds, of which \$260,000 worth are to be issued by city to pay its part in cost of construction. It is expected work will begin early in spring. Herbert S. Crocker, consulting engineer, is making actual working plans. Viaduct will be 1½ miles long. It will start at Federal Blvd. on west and run to point where West Colfax Ave. is intersected by Osage and Champa Sts. Wing will run from West Colfax Ave. to Eighth St., crossing main viaduct at First St.

**Pensacola, Fla.**—Bd. of Co. Comrs. of Santa Rosa and Escambia counties has passed resolution calling on bridge companies to submit tentative bids for bridges at Ferry Pass, Molino, McDavid and Bluff Springs. Companies can submit bids on any kind of bridges they may desire, including approaches to them, and boards will then take up matter and arrive at some conclusion regarding what kind of bridges they desire and their location, as well as number.

**Portland, Ind.**—Construction of bridge over Salamon River on South Meridian St. is being discussed.

**Lawrence, Mass.**—Plans of concrete bridges have been presented, estimates varying from \$99,368 for construction to \$300,000.

**Gulfport, Miss.**—During coming year three new county bridges will be constructed in Harrison County—a steel bridge 200 ft. long over Wolf River, a 200-ft. trestle over the Choctaw Creek and a 100-ft. wooden bridge over Bayou De Lisle.

**Hackensack, N. J.**—Question of inter-city bridge across the Hudson is being advocated.

**Batavia, N. Y.**—New plans for bridge over Main St. in Batavia which avoid curves at approaches in old blue prints will be submitted by H. H. Sutermeister at hearing before Comr. Hodson of Pub. Serv. Com.

**Ellenville, N. Y.**—Citizens have voted to issue \$10,000 bonds for erection of bridge over Rondout Stream, at East Warwarsing.

**Akron, O.**—Bd. of Co. Comrs. will sell to highest bidder at 11 a. m. Dec. 15, coupon bonds in sum of \$23,000 for No. Howard St. extension bridge. C. L. Bowler is Clk.

**Cincinnati, O.**—A joint meeting has been held of the Commissioners of Warren, Clermont and Hamilton counties in reference to erection of temporary bridge over Miami River at Loveland, O. There is to be permanent structure put up, but it will be some time before it can be finished. Commissioners have decided to order county engineers of all three counties to prepare plans for structure to cost not more than \$5,000.

**Miamisburg, O.**—Miamisburg is to have two new bridges instead of one, as has been proposed. It has been announced by Co. Comrs. that Co. Emergency Com. has determined to give Star City two bridges, cost of which will reach at least \$100,000. Structures will rest on the sites of two bridges which were swept away by flood.

**Youngstown, O.**—Ordinance has been passed to issue bonds for construction of bridge across Mahoning River at West Ave.



**Tillamook, Ore.**—Sum of \$41,000 will be spent by county for constructing bridges.

**Carlisle, Pa.**—G. A. Flink, of Harrisburg, is preparing plans for bridge to be erected at Mt. Holly.

**Philadelphia, Pa.**—construction of concrete bridge over Schuylkill River, 75 ft. below Fairmount dam, to provide better facilities between art gallery, aquarium and zoological gardens, has been advocated to the Plans & Impts. Com. of Fairmount Park Comm.

**Dallas, Tex.**—Upon recommendation of Commissioner Scott, Secretary was instructed to advertise for bids for building of concrete bridges on Thomas Ave. and on Carroll Ave. at intersection of Mill Creek. This work is in connection with paving of Carroll on Thomas to Munger, and Thomas from Haskell to Carroll, contracts for which have already been entered into.

**Fort Worth, Tex.**—Plans and specifications for Bear Creek bridge on Grapevine Rd., prepared by Engr. Travilla, have been approved by Co. Comrs. and Aud. has been instructed to advertise for bids. Bridge will cost about \$3,000.

**San Antonio, Tex.**—Bonds in sum of \$100,000 have been issued for construction of concrete bridges.

#### CONTRACTS AWARDED.

**Pine Bluff, Ark.**—By Jefferson Co. Free Bridge Comrs., to Missouri Valley Bridge & Iron Co., Leavenworth, Kan., at \$625,000, to construct bridge across Arkansas River. Contract includes approaches on either side and railroad tracks. Hedrick & Cochrane of Kansas City are engineers of district.

**Washington, D. C.**—By Commissioners of District of Columbia, contract for erection of five-span bridge over Rock Creek, at Q St., to A. L. Guidone & Co., Inc., 131 East 23d St., New York, at \$158,484.

**Boston, Mass.**—By Granite Ave. Bridge Building Commission, for erection of substructure, approaches and temporary bridge of Granite Ave. Bridge over Neponset River, to Holbrook, Cabot & Rollins Corporation, 6 Beacon St., Boston, \$36,910. Other bids as follows: W. H. Ellis, 479 Meridian St., East Boston, \$37,446; John Cashman & Sons Co., 247 Atlantic Ave., Boston, \$38,073; Rendle & Stoddard, 333 Border St., East Boston, \$44,792; L. Robert Tidd Co., 40 Central St., Boston, \$46,351; Lawler Bros., 16 City Sq., Charlestown, Mass., \$47,123; G. H. Harries, 31 Central Wharf, Boston, \$48,604; Coleman Bros., Chelsea, Mass., \$52,432.

**Pittsfield, Mass.**—Bd. of Pub. Wks. has voted to award contract for building of abutments on Merriam St. bridge to Crowe & Walsh of this city, lowest bidders, their figures being \$9,745. Other bidders were C. B. Lindholm of this city, \$10,253; W. C. Wood of North Adams, \$11,098; G. W. Gimlich, this city, \$11,474; George W. Van Ranken, Schenectady, \$12,134; G. W. Dwyer of Dalton, \$12,576; E. B. Roberts, Boston, \$13,832; C. E. Trumbull, Boston, \$14,004; Stephen Meneguale, Stockbridge, \$14,442; Antonio Accetulo, this city, \$14,692. Work will be started very soon.

**Independence, Mo.**—By Jackson Co. Comrs., to Thos. Gannon, at \$12,181, to construct 4 concrete bridges on Sni Bar Rd.

**Miles City, Mont.**—For constructing 3 bridges on Little Powder River by County Commissioners to Security Bridge Co. of Minneapolis, Minn., at \$19,053.

**Pittston, Pa.**—For constructing steel bridge over Susquehanna River at Water St., by County Commissioners to Penn Bridge Co., of Beaver Falls, at \$98,737.

**Salem, S. D.**—By Bd. of Co. Comrs., for concrete bridges in 1914 to W. A. Barnhart Constr. Co.

**Green Bay, Wis.**—Contract for construction of Main St. bridge to the Greiling Bros. of Green Bay for \$3,500. It will be a steel bascule.

**Ottawa, Ont.**—For constructing four bridges on eastern part of Transcontinental R. R., to Canadian Bridge Co. at \$90,469.

#### MISCELLANEOUS

**Birmingham, Ala.**—City is seeking information on collection and disposal of municipal garbage.

**San Francisco, Cal.**—City architects have prepared specifications for brick and terra cotta facing for two large courts of new city hall and bids for doing this work will be received by Board of Works. Estimated cost, \$35,000.

**Long Beach, Cal.**—Bids will be received by City Clerk of city of Long Beach until 7.30 o'clock p. m., Dec. 16, 1913, to purchase incinerator bonds of city of Long Beach, in amount of \$35,000. H. B. Riley is City Clerk.

**Waterbury, Conn.**—Appropriation of \$800 has been allowed for playground apparatus and equipment.

**Wilmington, Del.**—City Treas. Price, of Wilmington, on Dec. 18, will sell \$75,000 bonds for establishment of playgrounds.

**Pensacola, Fla.**—By first day of January Board of City Commissioners expect to have two garbage crematories in operation, as bids are being requested for construction and furnishing of second plant that will destroy from ten to fifteen tons of garbage per day. According to present plans, second plant will be erected short distance southeast of St. Michael's cemetery.

**Augusta, Ga.**—Augusta, Ga., has awarded \$250,000 of flood protection 4½% bonds to a syndicate composed of Robinson, Humphrey, Wardlaw Co., Atlanta; Baker, Watson & Co., Baltimore; Kissell, Kinnicut & Co., New York, and the Fifth Third National Bank of Cincinnati.

**Huntington, Ind.**—A street flushing system is being considered.

**Thornecreek, Ind.**—Notice is hereby given that B. F. Magley, trustee of Thornecreek township, Whitley County, Ind., will upon Dec. 27, 1913, offer for sale bonds of said township, in sum of \$2,000, in denominations of \$500 each.

**Fall River, Mass.**—Erection of new police station is recommended.

**Haverhill, Mass.**—E. H. Rollins & Sons, Boston, were successful among 10 bidders for Essex County bonds aggregating \$243,646.19.

**Haverhill, Mass.**—In his annual report, which will be submitted at close of year, Alderman Hood will recommend that \$9,000 be set aside in next year's appropriations for work of concreting course of Little River from Winter St. to Washington Square. He has had City Engr. Louis C. Lawton arrange plans for work.

**St. Louis, Mo.**—Mayor Kiel has announced that he would sign ordinance setting aside seventy acres in Forest Park for zoological garden, to be administered by board of seven. It is planned to ask municipal assembly for \$150,000 for new building for zoo.

**Schenectady, N. Y.**—Council has authorized purchase of land in Cotton Factory Hollow for Pleasant Valley Park; along river front for River Front Park, and east of McClellan St. for Central Park.

**Utica, N. Y.**—City Cont. Reusswig has announced that on Dec. 11 he would hold another popular sale of city bonds. Prior to time of sale those who wish to bid may personally or by letter make application for necessary bidding sheets. Amount of bonds to be sold is \$42,000. Purposes of bonds include city electric subway extension, purchasing additional land for park purposes, street cleaning, delinquent taxes and paving.

**Waterloo, N. Y.**—Board of Superv. is planning erection of new jail and new court house.

**Wilson, N. C.**—Municipal bonds of city of Wilson, amounting to \$160,000, have been sold to Baltimore firm at par and accrued interest. Proceeds will be used for improvement purposes.

**Akron, O.**—Ordinance has been passed to issue bonds in sum of \$15,875 for equipping and furnishing police signal system for police and fire station. I. A. Priest, Clerk of Council.

**Dayton, O.**—Engineer Charles Kline, Assistant Engineer Harry E. Finke and number of levelmen and rodmen have made surveys south of this city to fix the 3-mile limit pursuant to determine location of proposed garbage plant which will be built after contract awarded by Board of Control, which it is expected will meet for this purpose within next few days.

**Collinsville, Okla.**—At municipal election held here bonds in sum of \$11,000 for new parks and \$4,000 for city hall improvements have been voted by big majority.

**Klamath Falls, Ore.**—Election on issuance of bonds of \$50,000 for erection of new city hall has been carried by vote of 246 for and 69 against.

**Klamath Falls, Ore.**—Citizens have voted to issue \$50,000 bonds for erection of city hall.

**Philadelphia, Pa.**—An increase of \$10,000 for dredging in Schuylkill and Delaware rivers during 1914 has been advocated by Director Norris, of Dock Dept., in presenting his budget to Councilman Com. on Wharves, Docks and Ferries.

**Philadelphia, Pa.**—Chief Connell of Highway Bureau has notified James A. Mullin and Howard E. Ruch that they would receive contracts for street cleaning in 1914 in districts for which they submitted bids. Director Cooke and Chief Connell will inspect bids for remaining districts and decide what contracts shall be readvertised. Mullin bid \$146,000 for district in West Philadelphia north of Market St., held by Peoples Bros. this year at \$164,900. Vare made effort to land this contract at price \$5,000 under Peoples' contract of this year. Ruch bid \$197,850 for district from Poplar St. to Lehigh Ave., between Broad St. and Schuylkill River. Peoples Bros. held this year's contract at \$190,000 and bid \$219,000 for next year.

**Pittsburgh, Pa.**—Fifteen new shelter houses will be erected from appropriation of \$2,500 set aside for that purpose. Steps have been taken to close leases for property on sites chosen for buildings.

**Providence, R. I.**—Resolution has been passed appropriating \$150,000 for repairing City Hall.

**Providence, R. I.**—Resolution has been passed appropriating \$3,500 for a motor ambulance for Rhode Island Hospital.

**Spartanburg, S. C.**—It has been decided to purchase about \$2,000 worth of machinery for health and street departments, to consist of a sweeper, a flusher, etc. J. P. Fielder is Supt. of St. Dept.

**Sumter, S. C.**—Council has decided to issue \$20,000 City Hall bonds.

**Commerce, Tex.**—Organization of Civic Imp. League as adjunct to the Bd. of Trade has been perfected by ladies of this city under supervision of C. S. Welch, Secy. Plans have been outlined for parking of center of plaza, erection of public drinking fountain, improvement of City Park, and general improvements of streets.

**Pecos, Tex.**—Some time in Feb. election will be held for voting of \$500,000 of bonds for Ward Co. irrigation Dist. No. 1.

**San Antonio, Tex.**—\$20,000,000 is to be expended in San Antonio and Baker County during next three years, according to figures compiled by Secretary Ray M. Mackey of Realty Exchange Division of Chamber of Commerce. The exact figures are \$20,361,000, and this does not include number of propositions that are in sight, but upon which definite decision has not been made. Here is way the money is to be spent: Street improvement (bonds one-third), \$1,500,000; street improvement (property owners' two-thirds), \$3,000,000; street widening (bonds one-third), \$375,000; street widening (property owners' two-thirds), \$750,000; Commerce St. widening and improvement (district bonds), \$221,000; Commerce St. widening and improvement (private subscription), \$100,000; Commerce St. widening and improvement (city funds), \$90,000; Commerce St. widening and improvement (remodeling of private buildings), \$450,000; concrete bridges (bonds), \$100,000; additional sanitary sewers (bonds), \$800,000; additional storm sewers (bonds), \$300,000; additional sidewalks on city property (bonds), \$25,000; additional police and fire stations (bonds), \$175,000; City Hospital (bonds), \$125,000; garbage incinerator (bonds), \$50,000; additional public school buildings (bonds), \$300,000; improvement of county roads (bonds), \$550,000; county bridges (bonds), \$200,000; County Hospital (bonds), \$125,000; improvements to court house (bonds), \$75,000; County Poorhouse (bonds), \$50,000; total expenditure, \$9,361,000. Estimated consequential improvements during next three years, including building and expenditures by public service corporations, \$11,000,000; total, \$20,361,000.

**Newport News, Va.**—Resolution from Finance Committee appropriating \$275 for the purchase of a motor cycle for police department has been adopted.

**Fond du Lac, Wis.**—Co. Bd. is considering purchase of two stone crushers, one five-ton steam roller and a concrete mixer. Estimated cost is \$5,000.

**Fond du Lac, Wis.**—M. Costello, County Highway Commissioner, has asked County Board for one steam roller, concrete mixer, two stone crushers and miscellaneous tools. List will total about \$5,000.

**Green Bay, Wis.**—Residents of Brown Terrace to Webster Ave. Fol. Board and advocated purchase of two rock crushers and two road crushers.

**Niagara Falls, Ont., Can.**—City Council has accepted bid of Wood, Gundy & Co., of Toronto for \$37,735 worth of city bonds.